Internet Gaming, Emotional Intelligence, Psychological Distress, and Academic Performance Among University Students

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This research aimed at determining the relationship of internet gaming with emotional intelligence, psychological distress, and academic performance among university students; it also investigated whether playing timings could influence psychological distress and emotional intelligence. A sample comprising 315 university students (boys = 161, girls = 154) was collected. Internet Gaming Disorder Test (Pontes, Kiraly, Demetrovics, & Griffiths, 2014), Wong and Law Emotional Intelligence Scale (Wong & Law, 2002) and Depression Anxiety Stress Scale (Lovibond & Lovibond, 1995) were used. Academic performance was measured through grades obtained during last two semesters. Results revealed internet gaming had significant positive relationship with psychological distress, whereas it was linked to emotional intelligence and academic performance negatively. Students who played more after mid-night were psychologically more distressed than those who played during morning, evening, or early night time. Outcomes of this research will be beneficial in developing effective awareness programs for the individuals who are highly involved in internet gaming to understand its negative consequences.

Keywords. Internet gaming, emotional intelligence, psychological distress, academic performance, mid-night playing

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Internet gaming has become immensely popular over the last decade. Few researchers have found positive influences of video games (Jones, Moore, Rose & Choo, 2016) saying that they enhance student learning (Hwang & Chen, 2017) and functioning of teams (Thirunarayanan & Vilchez, 2012). Conversely, it is well established that problems may come up when internet gaming is too much. A survey in Canada revealed that 9.4% of gamers experience problematic gaming while 1.9% were described as having severe problems (Faulkner, Irving, Adlaf, & Turner, 2015; Salguero & Moran, 2002). Generally, it is logical to assume that problematic internet gaming is different from addicted gaming and relatively stable over time (Vadlin, Aslund, & Nilsson, 2018). Parents are becoming more and more concerned that internet gaming is gradually becoming a habit in their children (Young & De Abreu, 2017). Problematic or excessive internet gaming has been defined as recurrent and persistent indulgence in gaming that leads to functional impairment (American Psychiatric Association, 2013; Shapira et al., 2003). In addition, there is a continuing deliberation concerning the inclusion of *gaming disorder* in DSM-5 and ICD-11 (Van Rooij et al., 2018) and it has become an area in high need of more and more empirical evidence by researchers. Several studies have examined problematic internet use and internet addiction among university students because the undergraduate period tends to be a time when the internet is overused (Kandell, 1998; Young & De Abreu, 2017). Thus, the current study was planned in this area to understand and provide empirical evidence regarding influence of excessive internet gaming.

Gratification theory (Ruggiero, 2000) elaborates that the primary rationale for people utilizing various modes of media such as television, movies, internet, and computer games is to deal with mood and manage emotional conditions. Both youngsters and adults seek to increase positive emotions by playing video games. Russoniello, O'Brien, and Parks (2009) revealed a relationship between playing favorite games and mood gratification as well as the promotion of positive feelings. However, excessive involvement in internet gaming is not only declining productivity levels of individuals but is also damaging them psychologically. Lee, Shin, Cho, and Shin (2014) found that emotional issues in people having internet addiction increase with the degree of severity. Another study revealed that people who are spending more than 12 hours on internet a significant part of these hours was spent on playing online games (Ozturk, Ekinci, Ozturk, & Canan, 2013).

Excessive internet gaming can result in psychological distress (Shapira et al., 2003). Psychological distress can be defined as a

general emotional disturbance linked to stress, negative mood, and anxiety that most of the people experience at some point in their lifespan (Wong, Yuen, & Li, 2015). Epidemiological studies have found high comorbidity between excessive gaming and mood or anxiety disorders (Shaw & Black, 2008), and a positive relationship between psychological distress and severity of problematic gaming (Caplan, 2002; Ceyhan & Ceyhan, 2008; Ebeling-Witte, Frank, & Lester, 2007; Yeh, Ko, Wu, & Cheng, 2008; Yuen & Lavin, 2004). Davis's (2001) cognitive behavioral model proposed that psychological distress acts as a catalyst for excessive internet use. Psychological distress either develops from excessive gaming and internet use or is present long before this behavior is recognized, and can result from unmet needs (Ryan & Deci, 2000). As for example, it might be a result of shyness related to social difficulties (Chak & Leung, 2004; Ebeling-Witte et al., 2007). Online gaming and communication provide shy individuals with a safe zone to avoid face-to-face interpersonal communication and release all their negative feelings linked to it (Bessiere, Kiesler, Kraut, & Boneva, 2008). These individuals therefore might start depending on the internet to connect with others and to satisfy their need for relatedness, eventually leading to excessive use (Chak & Leung, 2004; Ebeling-Witte et al., 2007).

Researchers have also highlighted that there might also exist a negative association between excessive gaming and emotional intelligence. Wong and Law (2002) defined emotional intelligence as having four dimensions including self emotional appraisal (SEA), other's emotional appraisal (OEA), use of emotions (UOE), and regulation of emotions (ROE). SEA refers to an ability to understand one's deepest emotions and to express them naturally. OEA refers to an ability to perceive correctly and understand emotions of other people. UOE reflects how a person can use his /her emotions in constructive activities or to enhance personal performance. ROE is the anti-stress ability of an individual to regulate his/her emotions and to make quick recovery from stress. Suhail and Bargees (2006) studied undergraduate students in Pakistan and found that physical, psychological, educational, emotional, and interpersonal problems are associated with excessive internet use. They proposed that frequent and excessive use encourages less human contact and might make people antisocial or decrease levels of their emotional intelligence.

Researchers suggest that excessive internet gaming deteriorates academic as well as work productivity of an individual. This creates an imbalance in personality to the point that on one hand level of emotional intelligence falls low and on the other hand psychological distress reaches its peak (Berkey, Gardner, Frazier, & Colditz, 2000;

Cordes & Miller, 2000). Farooq (2003) also proposed a relationship between emotional intelligence and educational efficiency. Empirical research has shown a noteworthy inverse relationship between total time spent in front of the screen and academic efficiency of young and teenage students in schools and colleges (see e.g., Anderson, Gentile, & Buckley, 2007; Rideout, Foehr, & Roberts, 2010).

Researchers explain that individuals who consistently spend more hours on playing online games at night cannot be active at work in the morning and would compromise on the quality of their work and productivity (Ashkanasy, Härtel, & Zerbe, 2000). Thus, time of internet use and acuteness of internet addiction are significantly correlated (Hamissi, Babaie, Hosseini, & Babaie, 2013). However, the exact nature of relationship between time of playing internet games, psychological distress, and emotional intelligence is unknown.

Lemola et al. (2011) found that individuals who are habitual of playing computer game especially at late night-time have more depressive symptoms. Individuals with ages between 18 and 22 years reflected more susceptibility when they displayed the habit of playing late at night. Although, research guides that excessive internet gaming at late night is psychologically more damaging, yet it is unknown how damaging it could be in comparison to playing during morning, evening, or early night hours. In Pakistan also the college and university students are found to be immensely indulged in different kinds of internet activities and games. Few are on the verge of addiction while some are already addicted to excessive gaming. More than half of the students like to engage with internet activities in night hours (Iqbal & Mian, 2014).

Kun and Demetrovics (2010) explained that behavioral addictions are linked to emotional intelligence just like chemical addictions. Individuals with lower levels of emotional intelligence are more likely to experience heightened interpersonal and psychological issues (Petrides et al., 2016) which might result in excessive online gaming (Kuss & Griffiths, 2012). Having control over cognitions and emotions is an important factor that can prevent involvement in problematic behaviors (Casey, 2008; Shulman et al., 2016). Studies have found that people who find it difficult to deal with their emotions may get involved with and maintain excessive internet gaming to avoid dealing with real-life emotions. As a result, high emotional intelligence must be directly associated with lower internet gaming disorder scores (Che et al., 2017; Kircaburun, Demetrovics, Griffiths, & Billiuex, 2019). Similarly, Pakistani researchers have also revealed that over-indulgence in internet gaming declines mental health leading

to psychological distress and lowers the level of emotional intelligence (Fatima & Gillani, 2005).

All the above-mentioned researches on internet gaming, emotional intelligence, psychological distress, and academic performance laid the foundation for the current study. Therefore, the main aim of the current study was to find out how internet gaming is related to psychological distress, emotional intelligence, and academic performance. As no conclusive empirical evidence was found regarding the influence of specific time of the day on internet gaming, psychological distress and emotional intelligence, researchers thought it would be interesting to see what differences could be found in these study variables on the basis of different times of the day including morning, evening, early night or late midnight hours.

Hypotheses

Following hypotheses were outlined based on the above-mentioned interrelations among the constructs of the study:

1. Internet gaming will be positively related to psychological distress among university students.

2. Internet gaming will be negatively related to emotional intelligence among university students

3. Students with higher levels of involvement in internet games will have poor academic performance than those with lesser involvement.

Method

Sample

Sample for the current study was collected from different government and private sector universities of Rawalpindi and Islamabad, Pakistan. Purposive sampling technique was used to recruit a sample of 315 university students (boys = 161, girls = 154). Age range of the sample was 18-25 years ($M = 23.97$, $SD = 6.07$). Only those students were selected who were involved in internet gaming for at least last 12 months. The sample included 10.48% percent ($n = 33$) students with A grade, 35.24 percent ($n = 111$) students with B grade, 43.17% percent ($n = 136$) students with C grade, and 11.11 percent ($n = 35$) students with D grade in at least last 12 months. 4.76% percent ($n = 15$) students were mostly playing during morning time, 36.51% percent ($n = 115$) students were mostly playing during

evening time, 40% percent (*n* = 126) students were mostly playing during night time, 8.25% percent (*n* = 26) students were mostly playing during midnight time, and 10.48% percent (*n* = 33) students were mostly playing during any other time of the day.

Instruments

Following instruments were used in the present study along with information related to their age, gender, academic performance, timings, and total hours of play each day. English versions of all the instruments were used.

Internet Gaming Disorder Test (IGD-20 Test; Pontes et al., 2014). It consists of 20 items depicting the criteria of IGD explained in the DSM-5 (American Psychiatric Association, 2013) and is composed of the theoretical framework of the model of addiction including the six dimensions as Salience, Conflict, Tolerance, Mood Modification, Withdrawal Symptoms, and Relapse (Griffiths, 2005). Item number 1, 7, and 13 measure Salience; 2, 8, and 14 measure Mood Modification; 3, 9, and 15 measure tolerance; 4, 10, and 16 measure Withdrawal Symptoms; 5, 11, 17, 19, and 20 measure conflict; and 6, 12, and 18 measure Relapse dimension respectively. The test measures involvement in internet gaming during at least last 12 months period. Scoring is done on 5-point likert scale with response options ranging from *Strongly Disagree* (1) to *Strongly Agree* (2). Item number 2 and 19 follow the reverse scoring system. Total scores on the instrument fall within the range of 20 to 100 points and higher scores are indicative of higher degrees of involvement in internet gaming. Empirical studies suggest 71 score as cut-off for the instrument. Scores can be divided to four groups including normal with less than 21 points, low score is between 21and 49, moderate score is between 50 and 79 and severe dependency group falls in the range of 80 to 100 score. Internal consistency of the scale has been reported by researchers as good being derived through Cronbach's alpha as .87 (Pontes et al., 2014). For the present study, composite scores were used.

Wong and Law Emotional Intelligence Scale (WLEIS; Wong & Law, 2002). It comprises of 16 items and 4 subscales including Self-emotion Appraisal (SEA), Others' Emotion Appraisal (OEA), Use of Emotion (UOE) and Regulation of Emotion (ROE). There are four items in each of the subscale (Wong & Law, 2002). Scoring is done on a likert-type scale with 7 response options ranging from *Strongly Disagree* (7) to *Strongly Agree* (1). Lower scores reflect lower emotional intelligence while higher scores depict higher

emotional intelligence. Initial psychometric analyses including reliability, discriminant, factorial, convergent, and predictive validity of the scale reveal that it is reliable and valid scale to measure self-reported capacity to examine and control emotions (Law, Wong, & Song, 2004; Shi & Wang, 2007; Wong & Law, 2002). Alpha coefficients for the four subscales were found to be as .82 for SEA, .80 for OEA, .79 for ROE and .78 for UOE. In the present study, only the composite score of the scale was used.

Depression Anxiety and Stress Scale (DASS-21; Lovibond & Lovibond, 1995).   It is a self-report tool with 21 item intended to compute psychological distress in terms of anxiety, depression, and stress. There are 7 items in each of the three sub-scales. Scores for Depression, Anxiety and Stress are calculated by summing the scores for the relevant items. The DASS-21 is founded on a dimensional rather than a categorical notion of psychological disorders revealing distress. Although cut-off scores for conventional severity levels like normal, mild, moderate, severe and extremely severe are given but there are no straight implications for the assigning individuals any of the distinct diagnostic categorization. Thus, for present study higher scores on the scale reflected higher psychological distress. Several studies have been published on its reliability and validity throughout the world. All studies showed the DASS-21 is an excellent tool to measure psychological distress in both clinical and non-clinical populations (Antony, Bieling, Cox, Enns & Swinson, 1998; Vasconcelos-Raposo, Fernandes & Teixeira, 2013).

In addition, academic performance was measured in terms of grades obtained by students during the last two semesters. Students were asked to report their performance as falling under A, B, C or D grade category.

Procedure

The participants of this study were approached at their respective universities and were briefed about the aims of the current research. Only those students were included who showed willingness to participate in the study. Confidentiality of the information received from participants was guaranteed and they were assured that the information obtained from them would only be used for research purposes. Detailed instructions were delivered, and participants were requested to ask questions in case of any confusion. Then the item booklet was handed over to them which included informed consent, the three instruments and some questions related to gender, academic performance, timings and total hours of play each day. Researcher

asked them to answer each statement honestly. In the end, participants were thanked for their cooperation and participation. On average, participants took 45 minutes to complete the item booklet. Ethics protocol of the study was approved by Ethics committee of Foundation University, Rawalpindi Campus.

Results

The current study was carried out to reveal the relationship among internet gaming, emotional intelligence, psychological distress and academic performance of university students. Bivariate correlation and one-way ANOVA were performed using SPSS 22.

Table 1

Descriptive Statistics and Correlation Among Internet Gaming, Emotional Intelligence and Psychological Distress (N=315)

Measures	k	M	SD	S	K	α	1	2	3
IGDT-20	20	48.88	12.74	.04	-.73	.87	-	-.23[***]	.45[***]
WLEIS	16	77.68	19.47	-.56	-.29	.93	-	-	.37[***]
DASS-21	21	45.15	12.21	-.04	-.69	.89	-	-	-

Note. S = skewness; K = kurtosis; IGDT-20 = Internet Gaming Disorder Test; WLEIS = Wong and Law Emotional Intelligence Scale; DAS-21 = Depression Anxiety and Stress Scale.

[***]$p < .001$.

Table 1 show the results for descriptive statistics which are computed to see the overall distribution of data across the variables of the study. Mean value for emotional intelligence is higher as the cut-off for normal level of involvement with internet gaming is 21. The mean value is closer to moderate level of excessive involvement which starts at 50. Overall, values of skewness and kurtosis show that the data is normally distributed and fulfills the assumption of parametric testing. Cronbach alpha reliability estimates for internet gaming, emotional intelligence, and psychological distress range from .87 to .93 which is satisfactory as per the criteria specified by George (2011). Results show that internet gaming is positively related to psychological distress, while it is negatively related to emotional intelligence. These findings provide significant support for first and second hypotheses as p value is less than .001.

Table 2

Mean Differences Along Academic Performance of University Students on Study Variables (N = 315)

| | Grades | | | | | | | | | Turkey's |
| | A (*n* = 33) | | B (*n* = 111) | | C (*n* = 136) | | D (*n* = 35) | | | |
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	Post Hoc
IGDT	44.00	12.32	47.16	12.99	50.80	12.27	51.51	12.49	3.93[**]	4>1,2,3
WLEIS	78.36	21.34	77.51	18.09	78.19	20.42	75.60	18.74	.179	
DASS	40.67	12.93	44.29	12.45	46.07	12.27	48.57	9.07	2.88[*]	4>1,2,3

Note. IGDT = Internet Gaming Disorder Test; WLEIS = Wong and Law Emotional Intelligence Scale; DASS = Depression Anxiety and Stress Scale.

[*]$p < .01$; [**]$p < .05$.

Table 2 shows that university students with lowest level of academic performance that is, D grade show highest level of involvement with internet gaming as compared to those with A, B, or C grades. These findings reveal significant support for third hypothesis. Results also show that university students with lowest level of academic performance that is, D grade are psychologically more distressed as compared to those with A, B, or C grades. However, differences are nonsignificant in case of emotional intelligence.

Table 3

Mean Differences Along Groups of University Students Involved in Internet Gaming During Different Times on Study Variables (N = 315)

| | Time | | | | | | | | | Turkey's |
| | Morning (*n* = 48) | | Evening (*n* = 115) | | Early Night (*n* = 126) | | After Mid-Night (*n* = 26) | | | |
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	PostHoc
IGDT	48.20	14.26	49.13	12.08	44.62	13.74	52.61	12.74	3.94[**]	4>1,2,3
WLEIS	79.85	20.08	79.01	19.67	77.34	19.70	69.42	14.46	1.97	
DASS	23.32	11.65	24.51	12.04	22.99	12.14	30.15	13.02	2.61[*]	4>1,2,3

Note. IGDT-20 = Internet Gaming Disorder Test; WLEIS = Wong and Law Emotional Intelligence Scale; DAS-21 = Depression Anxiety and Stress Scale.

[*]$p < .01$; [**]$p < .05$.

Although no specific assumptions regarding differences in excessive internet gaming, psychological distress and emotional

intelligence on the basis of playing during different times of the day have been proposed; nevertheless, it would be interesting to find out the pattern of group differences on this dimension. Results in Table 3 show that students who prefer to play internet games after mid-night score significantly higher on internet gaming disorder test than those who play during morning, evening or early night time. Similarly, students who prefer to play games after mid-night are psychologically more distressed than those who play during morning, evening, or early-night time. Results also reveal that emotional intelligence of students who prefer to play games after mid-night is statistically not different from those who play during morning, evening, or night-time.

Discussion

Problematic computer use in the form of excessive internet gaming is a growing social issue which is being discussed worldwide (Cash, Rae, Steel, & Winkler, 2012) due to its crucial influence on the psychological health of people (Faulkner et al., 2015; Hamissi et al., 2013; Kircaburun et al., 2019; Petrides et al. 2016; Van Rooij et al., 2018). The field of internet gaming and addiction is progressing swiftly even without its official acknowledgment as a distinct behavioral problem. On the other hand, there is a continuing disagreement over its diagnostic criteria (Hinić, 2011; Cash et al., 2012). These facts have made it essential for researchers to investigate this domain.

Advancements in internet gaming has revolutionized the concept of games, interaction, and reinforcement (Wong et al., 2015). On the contrary, excessive gaming influences wellbeing and creates social disruptions as well as clinical issues (Lee et al., 2014; Wallace, 2014; Young & De Abreu, 2017). Internet gaming has been related to psychological distress, mood, and anxiety disorders (Caplan, 2002; Ceyhan & Ceyhan, 2008; Chak & Leung, 2004; Ebeling-Witte et al., 2007; Shaw & Black, 2008; Yeh et al., 2008; Yuen & Lavin, 2004).

Keeping in view the literature that suggests a positive association between internet gaming and psychological distress, in the present study also this relationship was studied among university students. Correlation analysis revealed that the findings were in line with the existing literature. University students involved in internet gaming were psychologically distressed and this distress increased as the level of involvement increased.

Prior studies have also considered a connection between emotional intelligence and internet gaming. A few studies have related emotional intelligence with technological addictions as smartphone addiction (Brunborg, Mentzoni, & Frøyland, 2014; Van Deursen, Bolle, Hegner, & Kommers, 2015) and internet gaming addiction (Beranuy, Oberst, Carbonell, & Chamarro, 2009) but these studies did not conclude that emotional intelligence predicts gaming addiction. However, Che et al. (2017) concluded that emotional intelligence was negatively associated with online gaming addiction in adolescents. Moreover, Kircaburun et al. (2019) proposed that individuals who want to avoid dealing their true emotions develop internet gaming disorder. Thus, keeping this background in mind, it was hypothesized that internet gaming will be negatively related to emotional intelligence among university students. Correlation analysis revealed that the finding of the current study was in line with the existing literature. Internet gaming had statistically significant relationship with emotional intelligence in the negative direction among university students.

In the present study, the link between internet gaming and academic performance was also established. It was proposed that internet gaming would be more common in group of students with poor academic performance than those with comparatively better academic performance. Results also revealed that mean of the group of students with lowest level of academic performance that is, D grade on internet gaming was significantly more as compared to those with A, B or C grades. This clearly suggested that excessive involvement in internet games was linked to poor academic performance among university students. Existing literature validates this finding of the current study. A number of research studies have showed a noteworthy inverse relationship between total time spent on internet and academic efficiency of young children and adolescents (Akhter, 2014; Ashkanasy et al., 2000; Berkey et al., 2000; Cordes & Miller, 2000; Rideout et al., 2010).

Although no specific assumptions regarding differences in excessive internet gaming, psychological distress and emotional intelligence on the basis of playing during different times of the day and night had been proposed, results showed that the mean score of the group of students who were gaming after mid night was significantly more than those who were gaming during morning, evening or night time. Results also revealed that students with higher levels of involvement in internet games after mid-night were psychologically more distressed as compared to those who played during morning, evening or early night time. Thus, this finding

suggest that internet gaming could bring more psychological distress when individuals are playing after mid night.

In addition, results revealed that emotional intelligence of students who preferred to play games after mid-night was not statistically different from those who played during morning, evening or night time. Thus, it brings out an interesting finding that emotional intelligence remains stable and unaffected whether internet gaming occurs during day or night-time. Researchers have also found that habitual computer game playing at night is related to many physical and psychological problems (Hamissi et al., 2013; Lemola et al., 2011; Suhail & Bargees, 2006).

Limitations and Recommendations

Sample was collected from different universities of Rawalpindi and Islamabad and thus the finding of the current study cannot be generalized to overall population of Pakistan. Future studies could include larger samples from multiples cities across all provinces for better generalization. In addition, experimental studies could be planned to explain the conceptual framework and causal relationships rather than simple relationships explained in this study. Moreover, cross-sectional research design was used in this study; a longitudinal design could provide more meaningful and reliable results. In future, researchers could include variety of other variables that explain antecedents and consequences of excessive internet gaming. Thus, more studies could be planned on different samples and populations to explain others possible predictors and factors for further validation. The current study did not investigate the positive effects of internet gaming. Therefore, future studies could consider the possibility of studying the positive effects of internet gaming.

Implications

The present research was done to fulfill the need of creating an awareness in society about the negative consequences of excessive internet gaming. Educationists and parents should try to encourage and monitor purposeful activities on the internet. This is because excessive internet gaming involving multiple players can become highly addictive. Parental rules in such situations can set the limit, thereby reducing excessive use of internet and minimizing its adverse outcomes. The current study also has implications for educational psychologists and mental health professionals as students use internet

for various academic activities, hence, there is a high probability that they might get engaged in excessive internet use and gaming. Therefore, current study can serve as a rich empirical data to educational psychologists and mental health professionals in understanding internet gaming and negative factors associated with it. Mental health professionals could prepare intervention programs for students to increase their emotional intelligence. Strict monitoring by parents should be done during late night hours as the current study found that students gaming after mid night were psychologically more distressed than those who were gaming at morning, evening or early night time.

Conclusion

Overall, the present study creates awareness among researchers, educational psychologists, and parents that excessive internet gaming increases psychological distress and is negatively related to emotional intelligence among university students. Thus, it is highly recommended that universities and education institutions must educate their students regarding the harmful consequences of excessive internet gaming. In addition, students must be provided with on campus and community counseling centers to detect early warning signs related to problematic internet gaming. In this perspective, special focus must be on the time at which students are playing internet games as findings of the study suggested that they were likely to experience more psychological distress when they were gaming after mid night.

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