Ilkogretim Online - Elementary Education Online, 2020; Vol 19 (Issue 4): pp. 4869-4886
http://ilkogretim-online.org
doi: 10.17051/ilkonline.2020.04.764892

Video Gaming And Its Association With Depression, Anxiety And Stress

Rabia Sabri, Head & Senior Lecturer, College of Commercial and Professional Studies,Institute of Business Management (IoBM), Karachi, Pakistan. Email: rabia.sabri@iobm.edu.pk
Dr. Munnawar Naz Khokhar, Assistant Professor, Department of Management Sciences,COMSATS University, Islamabad, Pakistan.Email: nazkhokhar@comsats.edu.pk
Dr. Muhammad Umer, Lecturer, Department of Management Sciences, COMSATS University, Islamabad, Pakistan. Email: m.umer@comsats.edu.pk
Dr. Muhammad Zeeshan Zafar, Assistant Professor, Faculty of Business and Management, Universityof Central Punjab, Lahore, Pakistan. Email: S4-zeeshan@ucp.edu.pk
Masood Hassan, Ph.D. Scholar, College of Business Management,Institute of Business Management (IoBM), Karachi, Pakistan. Email: masoodhassan1@hotmail.com (Corresponding Author)
Muhammad Asad Ullah, Senior Lecturer, College of Commercial and Professional Studies,Institute of Business Management (IoBM), Karachi, Pakistan. Email: m.asadullah@iobm.edu.pk

Abstract- The study's goal is to create a measure of video gaming and its relationship to depression, anxiety, and stress. There are many different genres of video games, such as combat games, open world games, action games, and sports games. There are mostly games played on smart phones and other gaming consoles such as PlayStation, Xbox, and PC.People usually play games to cheer themselves up, but it has been discovered that excessive video game playing can cause a variety of disorders, and even video gaming can cause persistent feelings of boredom and sadness. The current study intends to delve deeper and has generated three hypotheses. Samples are being collected from three universities and two colleges.After excluding invalid forms, data from 200 students were collected, and 171 forms were used for analysis. The method of judicious sampling has been used. Samples were collected from participants aged 15 and up. 16 questions were asked.It has been discovered that playing video games is associated with depression, anxiety, and stress to some extent, but not all video games are that bad, unless video gaming reaches a point where it causes disruptions in healthy life functions such as low grades, less physical activity, bad relationships, and poor work performance.The study's research design was unable to confirm potentially causal relationships between depression, anxiety, stress, and video gaming. The information gathered was based solely on a questionnaire, with no information provided by the family, which could have resulted in this diagnosis being misclassified.The lack of control for other confounding variables may have influenced the results, and future studies should evaluate and control for life events, social support, and other personality traits that may influence variables.

Keywords: Video Gaming, Depression, Anxiety, Stress,Correlation.

JEL Classification: D11, L82, L86.

1. Introduction

According to Kings, Delfabbro, and Griffiths (2013), video games include many different genres like combat games, open world games, action games and sports games. There are mostly those games which are played on smart phones and other gaming consoles like PlayStation, Xbox and PC.People normally play games to cheer themselves up. But it is noticed that excessive playing of video games can cause many types of disorders and even video gaming can cause relentless feelings of loss of interest and sadness. In addition it changes the way a person thinks and how he views the world. Playing excessive video games can result in different physical and emotional problems in a

Ilkogretim Online - Elementary Education Online, 2020; Vol 19 (Issue 4): pp. 4869-4886
http://ilkogretim-online.org
doi: 10.17051/ilkonline.2020.04.764892
person.Whenever we hear that excessive video gaming can cause stress and depression issues we often start to think that how can video gaming cause physical and emotional disorders and problems. Consistent gaming can:

- Decreases our patience level
- Increases frustration level
- Cause anger disorders
- Sometime cause nervousness issues in some people
- Usually increase stress level of people (King, Delfabbro, & Griffiths,2013).

Actually it's not true every time. Some games are also designed in such manner so they can help to reduce stress and anxiety level as well.Playing excessive Gaming can lead to extreme fear, worry, and nervousness. Even consistent gaming habits can cause exhaustion resulting in unease, which lately can also cause psychological issues, some specific phobias and panic attacks. This is not it; playing video games continuously causes many other physiological disorders at critical stages like high level stress, depression and anxiety (Winther, 2014).

We all know that trend of gaming is spreading like a wildfire. This type of expansion of online gaming is leading to extreme potential problems in gaming for a small minority of individual.Video games have been with us for nearly 40 years. The very first commercial video games came out for use in 1970s in US. And in early 1980s it was reported from that time the gaming addiction has begun to appear among the people. During 2000s remarkable growth was seen in video game playing, gaming researches and addiction. So such mediums have been developed, which helps and enables people to create a good online environment where they can gather and can play virtually in a group. The can also establish global online communities (Grifith,Kuss, & King, 2012).

Consequently, researches done over a period of last 10 years have shown a significant growth in online video gaming and video game addictions in people. In the same way there are many terms which have been employed to explain the excessive online gameplay like video game addiction, problem video game playing, pathological gaming, internet gaming addiction, video games dependency, online gaming addiction, problem video game playing, problematic online gaming and pathological video game use. Extreme variety of names, definitions and analytic instruments are applied to issue related to video gaming which have resulted in many discontinuities among researchers considering their way of behaviour in people (Griffith,2010; Brunborg, Mentzoni, & Frøyland,2014;Susman et al., 2018).

Emerging adulthood is a visible period in which a person begins to develop his identity, mature interpersonal relationships begin and adult roles increases. These type of multiple personality transitions may often encourage impatience in a person which can result in increased participation and leads to addiction. However, an individual might experience such addictive behaviour patterns which occur during the time period of adulthood and these patterns may consolidate as false adaptation of emotions and regulations of strategies during emergent adulthood (Sussman& Arnett,2014).

In row with this much playing of video games have been showing some help to the gamers in regulations of their negative emotions and thoughts in a same way to substances for substance abusers.This type of emotional self-controlling pattern may be astonished during emerged adulthood, as depending on person's supervision which is no longer enforced, yet adult type roles are not completely formed and developed.Moreover,self-medicating the pain of growing up along

Ilkogretim Online - Elementary Education Online, 2020; Vol 19 (Issue 4): pp. 4869-4886
http://ilkogretim-online.org
doi: 10.17051/ilkonline.2020.04.764892
with the addictions like internet gaming disorder (IGD) may negotiate with synchronized future adaptations. However, the developmental period of excessively emerging puberty is of specific interest with investigations of online gaming. This is further reinforced by both the occurrence of regular online gaming as well as internet gaming disorder behaviours which are being elevated during this growth time period (King &Delfabbro, 2014).

Following are some signs and symptoms of video gaming addiction:

- Irritation and feeling restless when person is unable to play games
- Anticipation of the next online session or obsession with thoughts of previous online activities
- Consequently, start to lie with family members or friends about the amount of time that person spends on playing.
- Person starts to cut off from other people in order to spend more time in gaming (Choo et al., 2015).

Following are some of the signs and symptoms of gaming which affects a person physically:

- Exhaustion and fatigue
- Migraines and severe headaches due to intense strain on eye and brain.
- Hand pains and carpal tunnel syndrome caused by the excessive use on playing controllers and computer mouse.
- Very poor personal hygiene
- Severe usage of video games can affect person's health as well (Ayenigbara,2017).

This study sought to develop a measure of video gaming and its association with depression, anxiety and stress.

2. Literature Review

Due to the fact that online games are available in a lot of genres online games are alluring a huge number of gamers that includes sports, reality games, gun shooting with many genres including many skill sets .A few types of game can be explained asSimulations games creates a simulation of a real experience. They include invading original vehicles like planes cars & teach you how to control them, use techniques that are also implied to teach & train professionals. In fact, a lot of pilots use simulators before they actually fly an aircraft. Adventure games are normally a single player game & are usually set up as a fictional world with adventures where you overcome challenges to advance on to next stage. It normally starts with a history about your character & then portrays the purpose of your character in the game. We have to figure out a way to complete the game.RTS real games require you to build up a whole collection of arms, guns & items just like a strategy game would, & it requires everyone to move & play at the same time without waiting for your turn.Puzzlegames fascinateindividuals who love reckoning out toughpuzzles. There are numerous different stages, like beginners to the skilled level, and video games generally have tinted patterns and artlessmovements. Such games can be referred as mind games which involves no movements.In order to cheerthefirmstrode video games the player needs must be efficient and must have excellent reflexes. They includesomaticdares, pointer–sensedirection and reaction-time (Rigby & Ryan, 2011).

The genuscomprises a large diversity of sub-genres. Players have to complete the challenges and side quests by defeating the enemies. In addition, the players can create a character of their own choice and jump into action. Stealth shooter games are generally war or spy-based games, where

Ilkogretim Online - Elementary Education Online, 2020; Vol 19 (Issue 4): pp. 4869-4886
http://ilkogretim-online.org
doi: 10.17051/ilkonline.2020.04.764892
the player use stealth to downfall the enemies. In order to avoid or overcome antagonist's player primarily uses stealth techniques. These types of games typically allow the player to remain hiddenand undetected by hiding, sneaking, or using special abilities.Combatgames include a one on one contest against the rivals, nearby and individual. For a player to enjoy these games he requires the ability to use controls for all kind of fighting moves and some pretty good responses. First Person Shooters games player has the leading role and is the protagonist. Video game is revolving around guns and other weapon-based combat in a first-person'sviewpoint and the game is viewed through player's eyes. Players can actually start loving these types of games. The only disadvantage is that you are seeing the game through your own eyes so you are not able see how your character looks like(Gee, 2006; Greenberg et al., 2010; Johnson & Gardner,2010).

Sports games allow us to enjoy real-world sports like baseball, basketball, soccer and more in which we can control the whole team.These games have been common all through the history of video games and aremodest, just like real-world sports.As you maximize numerous skill stages while playing, in these games you are representing real professional players and how they move. People usually prefer sports games which are based on explicit popular sporting events.Players necessitatemakingchoices which not only affects the plot of the games but also the image of that character. To help the players in making decision such kind of games are designed.It is a fact that children learn more effectively by these games.Opportunity is provided to the players to train in different themes, playing these games children learn by fun instead of finding it boring. Testing functions are also there, where the player can attempt MCQs. Education games for math, science, and ICT are most common(Gee, 2006; Greenberg et al., 2010; Johnson & Gardner, 2010).

For exploration intoInternet Gaming Disorder (IGD) prose cross sectional design and context related factors are used. For Anxiety and depression, and the gamer-avatar relationship (GAR) as risk factors in the expansion of IGD among teenagers, to examine stress the present study is a combo of a cross-sectional and longitudinal design, IGD behaviors of 120 gamers (61 online gamers, Mage = 23 years, SD= 3, 59 offline gamers, Mage = 23 years, SD= 3.4) were assessed using three scales:

- The Self-Presence Scale (Burleigh et al., 2018)
- Nine-item Internet Gaming Disorder IGDS-SF9(Király et al., 2017).
- The Beck Depression Inventory (Beck, Steer, &Carbin, 1988)

To measure gamers' stages of GAR and signs of depression these scales were also used. Warning analyses shows that in the improvement of IGD depression and the GAR act as discretemenace factors. In addition, the GAR intensifies the IGD risk effect of depression. Toexamine the behavior of a gamer this whole study is done, as well as his occurring depressive ups and downs surrounded by people mostly when they were get involved in playing other different online games. Not only this, researchers have done this study also to establish and create classes of gamers. Many game-related variables were inspected to begin the difference between three gamer types. According to the research, 456 participants were included which are divided into three different groups.

- People who favored real time strategy games (RTS).
- Players favoringonline shooters (OS) games.
- Players who favoreduniquely played substantial multiplayer online role-playing games (Knight et al., 2010).

Ilkogretim Online - Elementary Education Online, 2020; Vol 19 (Issue 4): pp. 4869-4886
http://ilkogretim-online.org
doi: 10.17051/ilkonline.2020.04.764892

Using these all results it was specified that players who favored MMORPG often show more awkward behavior, depressive tendencies and lower self-confidence by comparing with users playing other types of video games. MMORPG users in order to escape real life problem or challenging modes use that game challenging difficulties which are more often avoided (Smyth, 2007).

Use of online gamestoo often can become knotty and produceaggressive consequences. Different psychological factors have been shown to influence the development and the maintenance of this knotty behavior, by including motives to play (immersion, achievement, social affiliation), and self-esteem, impulsivity traits. The huge target of this study is to determine whether consistent subtypes of knotty online gamers can be recognized. A sample of 1057 online gamers was collected. Including impulsivity, motives to play, self-esteem and possible penalties, valid questions were used to count the psychological risk factors of playing which comprisesobsession symptoms, positive and negative affect. Actual in-game behaviors were also observed. Five consistent groups of gamers were recognized. Group comparison revealed that the psychological factors considered are differentially involved in problematic online gaming. These results or study show that problematic online gaming be subject to a wide range of psychological factors. At the clinical level, the diversity of psychological profiles shown supports the development of personalinvolvementswhich besieged a specific psychological contrivance. Overall, findings or results suggest that abstracting the problematic use of immensely multiplayer online role-playing games as ‘‘social addiction’’ is too restraining and might result in the simplification of heterogeneous and multi-determined problematic behaviors (González et al., 2020).

Following theories can be derived from the above studies:

- The problems arising due to online gaming depends on anextensive range of psychological factors
- Online Game play will be behavioral addiction
- Playing online/offline video games can help the players in releasing stress
- Video games can assist in getting rid of anxiety and depression (González et al., 2020).

Another research was conducted investigate the direct and indirect influences of video gaming on the level of anxiety, depression, and stress of Thai adolescents. Upon collecting 200 samples (age between 18 to 20 years), asking questions to gauge the primary variables which include depression, anxiety, stress, video game addiction, self-control, and social support. According to the results, it is safe to say that the higher the video gaming addiction gets, the higher the level of anxiety, depression, and stress rises. It also has indirect influences on dependent variables when self-control becomes the mediator. Simply put, according to the revelation, its only depression that decreases when the mediator, social support increases, keeping the video-game addiction high (Rujataronjai&Varma,2016).

The life phase between adolescence and young adulthood is referred as "emerging adulthood." In this phase an individual goes through immense learning experience before getting settled in life. This is when risky behaviors are likely to be promoted and behavioral addictions are mostly realized. We can reach to efficacious prevention programs only if we understand the difference between the individuals who develop and who don't develop gaming addictions (Arnett,2007).

It's yet to be clarified whether video games are habit or just an exaggeration by parents as addiction. According to a research, parents should worry about something more serious like

Ilkogretim Online - Elementary Education Online, 2020; Vol 19 (Issue 4): pp. 4869-4886
http://ilkogretim-online.org
doi: 10.17051/ilkonline.2020.04.764892
depression.Two studies have been carried out to assess the mental health of groups of teenagers and their gaming habit, considering how much time they spend daily. The findings were daunting. A study of journal Pediatrics, sampling 3000 students of 3rd, 4th, 7th & 8th grades in Singapore. The impulsive kids were seen to be spending more time on video games. After two years, these heavy gamers, spending average time of 31 hours a week, were found to be suffering with depression and were likely to have low grades and worse relationship with parents.The result followed another study came up last fall, published in The Archives of Pediatric & Adolescent Medicine, sampling up to 1,000 healthy Chinese teenagers ages 13 to 18. The researchers found the excessive internet users (video gamers) were likely to be depressed twice as compared to others after nine months (Kuss et al., 2014).

Before this study, Entertainment Software Association came hard on it. They defend video games, claiming that there's no consensus on the definition of pathological gaming or consideration of gaming to be addictive. It also challenged the state law against the sale of violent video games to minors, passed in California back in 2005. Also, it questioned other studies by the researchers. However, being an associate professor of psychology, Dr. Gentile says that his studies don't really show that playing games causes depression. He further added in young people various mental issues or pathological gaming may be caused one after other; just like flu followed by pneumonia.According to him his study has some chronological progression: The more impulsive young people, who were less empathetic and socially abundant, were more likely to be hardcore video gamers. Subsequently, they gradually became pathological gamers and seen to have low grades and worse relationship with parents. Then after two years they were the ones with more mental problems like social phobias, depression, and anxiety than those who spent less time on video games and those who stopped playing it so much.Also, many kids suffer mental disorders for which they can seek help from psychological aids; then what is the point to blame video games? This is where Dr. Gentile disagreed, saying that gaming habits of young people cannot be overlooked; studies proved its involvement in triggering mental issues already (Wei,2007).

Many studies reported the coexistence of mental health issues and video game addiction, while some have placed it within an appropriate context of mediating variables. Also, the differentiation between high engagement and video game addiction is yet to be certain. This study observed the intermediary role of improvising the measurement of video game engagement and addiction, and mental health; sampling 552 international adults. It completed an online survey that includes CAES (Computer Addiction-Engagement Scale, Depression, Anxiety Stress Scale and Avoidance/Approach Coping Questionnaires. The coping showed an important part of a connection between video game addiction and symptoms of anxiety, depression and stress. Poorer mental health were seen to be caused more with less use of approach coping strategies and more of withdrawal coping strategies, keeping motive of distraction unrelated. Also, maladaptive coping strategies partially explained the link between video game addiction and mental health; these strategies help highly engaged gamers to be more vulnerable to be the game addict (Loton et al., 2016).

The researchers from Nottingham Trent University and University of Oulu, Finland, found that video game addiction can trigger anxiety depression, low self-esteem, compulsive behaviors, and lack of concentration, self-control, impulsiveness and ailments such as wrist pain, and issues with nervous system. It was more prominent among the adult gamers. The overall findings showed that the problematic gaming behavior is linked with a broad range of detrimental health-based outcomes. WHO also declared to list gaming addiction as a renowned mental health condition? Gaming disorders were classified as the patterns of recurrent gaming habits, testified by gaming with precession over interest of life regardless of the negative consequences impacts. Furthermore,

Ilkogretim Online - Elementary Education Online, 2020; Vol 19 (Issue 4): pp. 4869-4886
http://ilkogretim-online.org
doi: 10.17051/ilkonline.2020.04.764892
the study determined the health-related costs and provided insights into video game addiction can lead to which particular health impairments (Lopez et al., 2019).

According to a study, gamers, spending 33 hours a week(excessive gamer) suffer 15% more anxiety and 25% more depression than those individuals who spend 21 hours a week(stable player). Game addict showed higher avoidance coping strategies and lower approach coping when compared to the balanced gamers; this sets video gaming as a coping mechanism to find escape or distractions from life challenges, said by Daniel Loton, a video game researcher. Upon comparing both the groups (excessive and stable gamers), keeping physical and mental health, academic results and relationships as parameters; it was revealed that the excessive gamers are less likely to deal with an intrinsic situation and face problem in controlling anger than the stable gamers. It may be because they spend less time dealing with real life issues and working on their mental health. The difference between the mental level of a beginner gamer and the expert excessive gamers is yet to be determined (Lehenbauer et al., 2015;Loton et al., 2016).

Another study explored the relationship between video games and anxiety which is quite enmeshed. Video games are an alluring distraction for the people suffering from anxiety and make them hooked. But, the more they play video games, the more their anxiety level increases. According to researchers, this relationship depends heavily on personality traits of a gamer. Among five primary traits classified by the psychologists, Neuroticism is one which means being prone to anxiety. According to Dr. Brent Conrad, a clinical psychologist, people with higher levels of aggressive behaviors and neuroticism are most likely to develop video game addiction. Nevertheless, video games often provide relief from stress and anxiety (true for both trait anxiety and anxiety disorders such as social phobia). But, social anxiety has an acute relationship with video gaming; since it can lead to excessive video gaming and gaming can further worsen social anxiety disorder. This is because the gamers find a coping mechanism in video games by interacting with people in virtual world and not going out, meeting real people or giving time to family. This worsens their social anxiety and when the gaming increases, real social life with friends and family decreases (Rigby & Ryan,2011)

In the light of these researches following hypotheses have been formulated:

H1 There would be a significant relationship between depression and video gaming.
H2 There would be a significant relationship between anxiety and video gaming.
H3 There would be a significant relationship between stress and video gaming.

3. Methodology

3.1 Sample

Samples from three Universitiesand twoCollegesare being collected. Data of 200 students have been collected, after excluding invalid forms, 171 forms were used for analysis.Judgmental sampling method has been adopted. Samples were collected from participant having age of 15 and more.

3.2 Research Tools

- Consent form
- Demographic form
- Questionnaire of DASS

Ilkogretim Online - Elementary Education Online, 2020; Vol 19 (Issue 4): pp. 4869-4886
http://ilkogretim-online.org
doi: 10.17051/ilkonline.2020.04.764892

3.3 Procedure

Initially students were provided with consent forms to show their willingness also they were asked to sign them. Demographic form was also given to students which also included questions related to gaming habits.

3.4 Statistical Analysis

After gathering required data it was added to SPSS Version 21 for further process.Pearson correlation was used to check the correlation of 16 questions.

4. Results

In question number 1, it was asked that how often you play games. The correlation of this question with depression is negative but with anxiety and stress though the correlation is positive.

Table 1

Correlations					
		Depression	**Anxiety**	**Stress**	**Q1**
Depression	Pearson Correlation	1	.686**	.677**	-.081
	Sig. (2-tailed)		.000	.000	.293
	N	171	171	171	171
Anxiety	Pearson Correlation	.686**	1	.748**	.031
	Sig. (2-tailed)	.000		.000	.688
	N	171	171	171	171
Stress	Pearson Correlation	.677**	.748**	1	.087
	Sig. (2-tailed)	.000	.000		.257
	N	171	171	171	171
Q1	Pearson Correlation	-.081	.031	.087	1
	Sig. (2-tailed)	.293	.688	.257	
	N	171	171	171	171

In question number 2, it was asked that at which age you started play games. The correlation of this question with depression is negative and very weak similar is the case with anxiety and stress.

Table 2

Correlations					
		Depression	**Anxiety**	**Stress**	**Q3**
Depression	Pearson Correlation	1	.686**	.677**	-.038
	Sig. (2-tailed)		.000	.000	.618
	N	171	171	171	171
Anxiety	Pearson Correlation	.686**	1	.748**	-.075
	Sig. (2-tailed)	.000		.000	.329
	N	171	171	171	171
Stress	Pearson Correlation	.677**	.748**	1	-.004
	Sig. (2-tailed)	.000	.000		.963
	N	171	171	171	171
Q2	Pearson Correlation	-.038	-.075	-.004	1

Ilkogretim Online - Elementary Education Online, 2020; Vol 19 (Issue 4): pp. 4869-4886
http://ilkogretim-online.org
doi: 10.17051/ilkonline.2020.04.764892

	Sig. (2-tailed)	.618	.329	.963	
	N	171	171	171	171

In question number 3, it was asked that if you feel you've become addicted to gaming. The correlation of this question with depression is positive and very weak similar is the case with anxiety and stress the correlation is positive.

Table 3

Correlations					
		Depression	**Anxiety**	**Stress**	**Q4**
Depression	Pearson Correlation	1	.686**	.677**	.049
	Sig. (2-tailed)		.000	.000	.526
	N	171	171	171	171
Anxiety	Pearson Correlation	.686**	1	.748**	.000
	Sig. (2-tailed)	.000		.000	.999
	N	171	171	171	171
Stress	Pearson Correlation	.677**	.748**	1	.049
	Sig. (2-tailed)	.000	.000		.526
	N	171	171	171	171
Q3	Pearson Correlation	.049	.000	.049	1
	Sig. (2-tailed)	.526	.999	.526	
	N	171	171	171	171

In question number4, it was asked that what your preference are when you do gaming. The correlation of this question with depression is positive and very weak similar is the case with stress and though the correlation is negative with anxiety.

Table 4

Correlations					
		Depression	**Anxiety**	**Stress**	**Q6**
Depression	Pearson Correlation	1	.686**	.677**	.034
	Sig. (2-tailed)		.000	.000	.657
	N	171	171	171	171
Anxiety	Pearson Correlation	.686**	1	.748**	-.004
	Sig. (2-tailed)	.000		.000	.956
	N	171	171	171	171
Stress	Pearson Correlation	.677**	.748**	1	.012
	Sig. (2-tailed)	.000	.000		.875
	N	171	171	171	171
Q4	Pearson Correlation	.034	-.004	.012	1
	Sig. (2-tailed)	.657	.956	.875	
	N	171	171	171	171

In question number 5, it was asked that if you had more time would you chose to spend more time gaming. The correlation of this question with depression is positive and very weak similar is the case with anxiety and stress.Data is significant for this question.

Ilkogretim Online - Elementary Education Online, 2020; Vol 19 (Issue 4): pp. 4869-4886
http://ilkogretim-online.org
doi: 10.17051/ilkonline.2020.04.764892

Table 5

Correlations					
		Depression	**Anxiety**	**Stress**	**G1**
Depression	Pearson Correlation	1	.686**	.677**	.191*
	Sig. (2-tailed)		.000	.000	.012
	N	171	171	171	171
Anxiety	Pearson Correlation	.686**	1	.748**	.171*
	Sig. (2-tailed)	.000		.000	.025
	N	171	171	171	171
Stress	Pearson Correlation	.677**	.748**	1	.161*
	Sig. (2-tailed)	.000	.000		.036
	N	171	171	171	171
Q5	Pearson Correlation	.191*	.171*	.161*	1
	Sig. (2-tailed)	.012	.025	.036	
	N	171	171	171	171

In question number Q6, it was asked that I only play video games with other people in the same room or over the Internet.The correlation of this question with depression is positive and very weak similar is the case with anxiety and stress. Data is significant for this question.

Table 6

Correlations					
		Depression	**Anxiety**	**Stress**	**G2**
Depression	Pearson Correlation	1	.686**	.677**	.183*
	Sig. (2-tailed)		.000	.000	.017
	N	171	171	171	171
Anxiety	Pearson Correlation	.686**	1	.748**	.146
	Sig. (2-tailed)	.000		.000	.057
	N	171	171	171	171
Stress	Pearson Correlation	.677**	.748**	1	.187*
	Sig. (2-tailed)	.000	.000		.014
	N	171	171	171	171
Q6	Pearson Correlation	.183*	.146	.187*	1
	Sig. (2-tailed)	.017	.057	.014	
	N	171	171	171	171

In question number 7, it was asked that I only play video games on social media.The correlation of this question with depression is positive and very weak similar is the case with anxiety and stress. Data is significant for stress.

Table 7

Correlations					
		Depression	**Anxiety**	**Stress**	**G3**
Depression	Pearson Correlation	1	.686**	.677**	.285**

Ilkogretim Online - Elementary Education Online, 2020; Vol 19 (Issue 4): pp. 4869-4886
http://ilkogretim-online.org
doi: 10.17051/ilkonline.2020.04.764892

	Sig. (2-tailed)		.000	.000	.000
	N	171	171	171	171
	Pearson Correlation	.686**	1	.748**	.247**
Anxiety	Sig. (2-tailed)	.000		.000	.001
	N	171	171	171	171
	Pearson Correlation	.677**	.748**	1	.157*
Stress	Sig. (2-tailed)	.000	.000		.040
	N	171	171	171	171
	Pearson Correlation	.285**	.247**	.157*	1
Q7	Sig. (2-tailed)	.000	.001	.040	
	N	171	171	171	171

In question number 8, it was asked that I neglect other activities because I would rather spend time gaming. The correlation of this question with depression is positive and very weak similar is the case with anxiety and stress. Data is significant for stress.

Table 8

Correlations					
		Depression	**Anxiety**	**Stress**	**G4**
	Pearson Correlation	1	.686**	.677**	.202**
Depression	Sig. (2-tailed)		.000	.000	.008
	N	171	171	171	171
	Pearson Correlation	.686**	1	.748**	.197**
Anxiety	Sig. (2-tailed)	.000		.000	.010
	N	171	171	171	171
	Pearson Correlation	.677**	.748**	1	.159*
Stress	Sig. (2-tailed)	.000	.000		.038
	N	171	171	171	171
	Pearson Correlation	.202**	.197**	.159*	1
Q8	Sig. (2-tailed)	.008	.010	.038	
	N	171	171	171	171

In question number 9, it was asked that I feel that gaming causes problems (disturb academics, disturb family or social life, disturb work tasks) for me in my life. The correlation of this question with depression is negative and very weak similar is the case with anxiety and negative for stress.

Table 9

Correlations					
		Depression	**Anxiety**	**Stress**	**G5**
	Pearson Correlation	1	.686**	.677**	.107
Depression	Sig. (2-tailed)		.000	.000	.164
	N	171	171	171	171
	Pearson Correlation	.686**	1	.748**	.043
Anxiety	Sig. (2-tailed)	.000		.000	.574
	N	171	171	171	171

Ilkogretim Online - Elementary Education Online, 2020; Vol 19 (Issue 4): pp. 4869-4886
http://ilkogretim-online.org
doi: 10.17051/ilkonline.2020.04.764892

	Pearson Correlation	.677**	.748**	1	-.066
Stress	Sig. (2-tailed)	.000	.000		.390
	N	171	171	171	171
	Pearson Correlation	.107	.043	-.066	1
Q9	Sig. (2-tailed)	.164	.574	.390	
	N	171	171	171	171

In question number 10, it was asked that I play longer than originally planned. .The correlation of this question with depression is positive and very weak similar is the case with anxiety and stress. Data is significant for anxiety.

Table 10

Correlations					
		Depression	**Anxiety**	**Stress**	**G6**
	Pearson Correlation	1	.686**	.677**	.166*
Depression	Sig. (2-tailed)		.000	.000	.030
	N	171	171	171	171
	Pearson Correlation	.686**	1	.748**	.153*
Anxiety	Sig. (2-tailed)	.000		.000	.046
	N	171	171	171	171
	Pearson Correlation	.677**	.748**	1	.092
Stress	Sig. (2-tailed)	.000	.000		.230
	N	171	171	171	171
	Pearson Correlation	.166*	.153*	.092	1
Q10	Sig. (2-tailed)	.030	.046	.230	
	N	171	171	171	171

In question number 11, I play longer than originally planned. The correlation of this question with depression is positive and very weak similar is the case with anxiety and stress. Data is significant for stress only.

Table 11

Correlations					
		Depression	**Anxiety**	**Stress**	**G7**
	Pearson Correlation	1	.686**	.677**	.270**
Depression	Sig. (2-tailed)		.000	.000	.000
	N	171	171	171	171
	Pearson Correlation	.686**	1	.748**	.240**
Anxiety	Sig. (2-tailed)	.000		.000	.002
	N	171	171	171	171
	Pearson Correlation	.677**	.748**	1	.158*
Stress	Sig. (2-tailed)	.000	.000		.040
	N	171	171	171	171
	Pearson Correlation	.270**	.240**	.158*	1
Q11	Sig. (2-tailed)	.000	.002	.040	

Ilkogretim Online - Elementary Education Online, 2020; Vol 19 (Issue 4): pp. 4869-4886
http://ilkogretim-online.org
doi: 10.17051/ilkonline.2020.04.764892

	N	171	171	171	171

In question number 12, it was asked that I feel that I should reduce the amount of time I spend on gaming.The correlation of this question with depression is positive and very weak similar is the case with anxiety and stress.

Table 12

Correlations					
		Depression	**Anxiety**	**Stress**	**G8**
Depression	Pearson Correlation	1	.686**	.677**	.090
	Sig. (2-tailed)		.000	.000	.242
	N	171	171	171	171
Anxiety	Pearson Correlation	.686**	1	.748**	.048
	Sig. (2-tailed)	.000		.000	.535
	N	171	171	171	171
Stress	Pearson Correlation	.677**	.748**	1	.059
	Sig. (2-tailed)	.000	.000		.441
	N	171	171	171	171
Q12	Pearson Correlation	.090	.048	.059	1
	Sig. (2-tailed)	.242	.535	.441	
	N	171	171	171	171

In question number 13 it was asked that I see people around me complaining that I am gaming too much. The correlation of this question with depression is positive and very weak similar is the case with anxiety and stress.

Table 13

Correlations					
		Depression	**Anxiety**	**Stress**	**G9**
Depression	Pearson Correlation	1	.686**	.677**	.128
	Sig. (2-tailed)		.000	.000	.096
	N	171	171	171	171
Anxiety	Pearson Correlation	.686**	1	.748**	.131
	Sig. (2-tailed)	.000		.000	.089
	N	171	171	171	171
Stress	Pearson Correlation	.677**	.748**	1	.038
	Sig. (2-tailed)	.000	.000		.619
	N	171	171	171	171
Q13	Pearson Correlation	.128	.131	.038	1
	Sig. (2-tailed)	.096	.089	.619	
	N	171	171	171	171

In question number 14, it was asked that I fail to meet up with social activities because I was gaming. The correlation of this question with depression is positive and very weak similar is the case with anxiety and stress. Data is significant for stress only.

Ilkogretim Online - Elementary Education Online, 2020; Vol 19 (Issue 4): pp. 4869-4886
http://ilkogretim-online.org
doi: 10.17051/ilkonline.2020.04.764892

Table 14

Correlations					
		Depression	**Anxiety**	**Stress**	**G10**
Depression	Pearson Correlation	1	.686**	.677**	.236**
	Sig. (2-tailed)		.000	.000	.002
	N	171	171	171	171
Anxiety	Pearson Correlation	.686**	1	.748**	.247**
	Sig. (2-tailed)	.000		.000	.001
	N	171	171	171	171
Stress	Pearson Correlation	.677**	.748**	1	.181*
	Sig. (2-tailed)	.000	.000		.018
	N	171	171	171	171
Q14	Pearson Correlation	.236**	.247**	.181*	1
	Sig. (2-tailed)	.002	.001	.018	
	N	171	171	171	171

In question number 15, it was asked that I feel that gaming causes health issues for me in my life. The correlation of this question with depression is positive and very weak similar is the case with anxiety and stress. Data is significant for anxiety.

Table 15

Correlation					
		Depression	**Anxiety**	**Stress**	**G11**
Depression	Pearson Correlation	1	.686**	.677**	.281**
	Sig. (2-tailed)		.000	.000	.000
	N	171	171	171	171
Anxiety	Pearson Correlation	.686**	1	.748**	.189*
	Sig. (2-tailed)	.000		.000	.013
	N	171	171	171	171
Stress	Pearson Correlation	.677**	.748**	1	.146
	Sig. (2-tailed)	.000	.000		.056
	N	171	171	171	171
Q15	Pearson Correlation	.281**	.189*	.146	1
	Sig. (2-tailed)	.000	.013	.056	
	N	171	171	171	171

In question number 16, it was asked I feel there is a link between mental health and gaming. The correlation of this question with depression is negative and very weak similar is the case with anxiety and stress but correlation is positive.

Table 16

Correlation					
		Depression	**Anxiety**	**Stress**	**G12**
Depression	Pearson Correlation	1	.686**	.677**	-.055
	Sig. (2-tailed)		.000	.000	.477

Ilkogretim Online - Elementary Education Online, 2020; Vol 19 (Issue 4): pp. 4869-4886
http://ilkogretim-online.org
doi: 10.17051/ilkonline.2020.04.764892

	N	171	171	171	171
	Pearson Correlation	.686**	1	.748**	.044
Anxiety	Sig. (2-tailed)	.000		.000	.564
	N	171	171	171	171
	Pearson Correlation	.677**	.748**	1	.009
Stress	Sig. (2-tailed)	.000	.000		.902
	N	171	171	171	171
	Pearson Correlation	-.055	.044	.009	1
Q16	Sig. (2-tailed)	.477	.564	.902	
	N	171	171	171	171

5. Discussion

Two of the hypotheses which were there would be a significant relationship between depression and video gaming and there would be a significant relationship between anxiety and video gaming got disproved as there were no significance was shown. Though for some items, the last hypothesis got proved which was there would be a significant relationship between stress and video gaming to some extent significance was seen.

A weak negative correlation has been seen between depression and gaming which can be justify as depression can be treated with gaming in support of this a study reviewed the existing literature on game-based digital interventions for depression and observed the efficacy via a meta-analysis RCTs (Randomized controlled trials. This review included nineteen studies and ten RCTs in the meta-analysis, 4 types of game interventions, virtual reality exposure therapy, psycho-education and training, exercising and entertainment were found out; with different support given and targeted masses. The moderate effect-size of game inventions for depression therapy was revealed. Smaller effects were seen on the interventions based on psycho education and training than other forms; whereas, self-help interventions showed better results. The findings supported the efficacy game-based digital interventions for depression (Li et al., 2018).

A negative correlation with anxiety and stress can also be seen in the results showing that gaming can help in reduction of anxiety and stress this can be justify with the help of a research which says there can be two possible motivations for video gaming, entertainment and distraction from stress and anxiety. According to a paper of survey published in the journal of Psychology of Popular Media Culture; which examined the frequency of video gaming of college students, coping strategies, symptoms of different mental issues including gaming disorders; the use of gaming for distraction from anxiety triggers symptoms of gaming disorder and increases the risk of stress and dysfunctional symptoms. Not all the video games are that bad, unless video gaming reaches to a point when it causes to disrupt healthy life functions like low grades, less physical activity, bad relationships, poor work performance (Griffiths, Davies, & Chappell,2004).

Another study was conducted which can justify the results by Nahyum Kim of Keimyung University College of Nursing, examined if there could be any comparison between anxiety levels of resting state plasma catecholamine of Korean male adolescents with excessive internet gaming addiction. The blood samples of 230 males were analyzed for epinephrine, dopamine and norepinephrine; with the answers to questionnaires, assessing internet gaming addiction and anxiety levels. The findings showed that the levels of epinephrine and norepinephrine were lower of game addicts as compared to stable gamers. It's worth noting that there was no relationship between catecholamine and anxiety levels. The research concluded that based on the above-mentioned psychological

Ilkogretim Online - Elementary Education Online, 2020; Vol 19 (Issue 4): pp. 4869-4886
http://ilkogretim-online.org
doi: 10.17051/ilkonline.2020.04.764892
effects, interventions to retreat or treat internet game addiction should also include the stabilization of epinephrine and norepinephrine and also anxiety levels (Kim et al.,2016).

6. Limitations

This study had several limitations.

- The research design of the study could not confirm potentially causal relationships among depression, anxiety, stress and video gaming.
- Second, the information collected was based on only a questionnaire based without information provided by the family, which could have resulted in a misclassification of this diagnosis.
- Third, the sample was small and included a higher proportion of young students than exists in the general population; hence, some meaningful associations may not have been detected as statistically significant and the findings may not be generalizable.
- In addition, the small number of participants limits the possibility to compare the role of video gaming on depression, anxiety, and stress and video gaming.
- Finally, lack of control for other confounding variables may have affected the results.
- Future studies should evaluate and control for the life events, social support, and other personality characteristics that might affect variables.

References

Arnett, J. J. (2007). Emerging adulthood: What is it, and what is it good for?. Child development perspectives, 1(2), 68-73.

Ayenigbara, I. O. (2017). Gaming disorder and effects of gaming on health: An overview. Journal of Addiction Medicine and Therapeutic Science, 4(1), 001-003.

Beck, A. T., Steer, R. A., &Carbin, M. G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. Clinical psychology review, 8(1), 77-100.

Brunborg, G. S., Mentzoni, R. A., &Frøyland, L. R. (2014). Is video gaming, or video game addiction, associated with depression, academic achievement, heavy episodic drinking, or conduct problems?. Journal of behavioral addictions, 3(1), 27-32.

Burleigh, T. L., Stavropoulos, V., Liew, L. W., Adams, B. L., & Griffiths, M. D. (2018). Depression, internet gaming disorder, and the moderating effect of the gamer-avatar relationship: An exploratory longitudinal study. International Journal of Mental Health and Addiction, 16(1), 102-124.

Choo, H., Sim, T., Liau, A. K., Gentile, D. A., &Khoo, A. (2015). Parental influences on pathological symptoms of video-gaming among children and adolescents: A prospective study. Journal of Child and Family Studies, 24(5), 1429-1441.

D Griffiths, M., J Kuss, D., & L King, D. (2012). Video game addiction: Past, present and future. Current Psychiatry Reviews, 8(4), 308-318.

Gee, J. P. (2006). Are video games good for learning?. Nordic Journal of Digital Literacy, 1(03), 172-183.

González-Bueso, V., Santamaría, J. J., Oliveras, I., Fernández, D., Montero, E., Baño, M., ...&Ribas, J. (2020). Internet gaming disorder clustering based on personality traits in adolescents, and its relation with comorbid psychological symptoms. International journal of environmental research and public health, 17(5), 1516.

Greenberg, B. S., Sherry, J., Lachlan, K., Lucas, K., &Holmstrom, A. (2010).Orientations to video games among gender and age groups. Simulation & Gaming, 41(2), 238-259.

Griffiths, M. (2010). Online video gaming: what should educational psychologists know?. Educational psychology in practice, 26(1), 35-40.

Griffiths, M. D., Davies, M. N., & Chappell, D. (2004). Demographic factors and playing variables in online computer gaming. CyberPsychology& behavior, 7(4), 479-487.

J Kuss, D., D Griffiths, M., Karila, L., &Billieux, J. (2014). Internet addiction: A systematic review of epidemiological research for the last decade. Current pharmaceutical design, 20(25), 4026-4052.

Johnson, D., & Gardner, J. (2010, November).Personality, motivation and video games.In Proceedings of the 22nd Conference of the Computer-Human Interaction Special Interest Group of Australia on Computer-Human Interaction (pp. 276-279).

Kardefelt-Winther, D. (2014). Problematizing excessive online gaming and its psychological predictors. Computers in Human Behavior, 31, 118-122.

Kim, N., Hughes, T. L., Park, C. G., Quinn, L., & Kong, I. D. (2016). Resting-state peripheral catecholamine and anxiety levels in Korean male adolescents with Internet game addiction. Cyberpsychology, Behavior, and Social Networking, 19(3), 202-208.

King, D. L., &Delfabbro, P. H. (2014). The cognitive psychology of Internet gaming disorder. Clinical psychology review, 34(4), 298-308.

King, D. L., Delfabbro, P. H., & Griffiths, M. D. (2013). Trajectories of problem video gaming among adult regular gamers: an 18-month longitudinal study. Cyberpsychology, behavior, and social networking, 16(1), 72-76.

Király, O., Sleczka, P., Pontes, H. M., Urbán, R., Griffiths, M. D., &Demetrovics, Z. (2017).Validation of the ten-item Internet Gaming Disorder Test (IGDT-10) and evaluation of the nine DSM-5 Internet Gaming Disorder criteria. Addictive behaviors, 64, 253-260.

Knight, J. F., Carley, S., Tregunna, B., Jarvis, S., Smithies, R., de Freitas, S., ...&Mackway-Jones, K. (2010). Serious gaming technology in major incident triage training: a pragmatic controlled trial. Resuscitation, 81(9), 1175-1179.

Lehenbauer-Baum, M., Klaps, A., Kovacovsky, Z., Witzmann, K., Zahlbruckner, R., &Stetina, B. U. (2015). Addiction and engagement: an explorative study toward classification criteria for internet gaming disorder. Cyberpsychology, Behavior, and Social Networking, 18(6), 343-349.

Lemmens, J. S., Valkenburg, P. M., & Gentile, D. A. (2015).The Internet gaming disorder scale. Psychological assessment, 27(2), 567.

Li, J., Erdt, M., Chen, L., Cao, Y., Lee, S. Q., &Theng, Y. L. (2018). The social effects of exergames on older adults: systematic review and metric analysis. Journal of medical Internet research, 20(6), e10486.

Lopez-Fernandez, O., Griffiths, M. D., Kuss, D. J., Dawes, C., Pontes, H. M., Justice, L., ...&Billieux, J. (2019). Cross-cultural validation of the Compulsive Internet Use Scale in four forms and eight languages. Cyberpsychology, Behavior, and Social Networking, 22(7), 451-464.

Loton, D., Borkoles, E., Lubman, D., &Polman, R. (2016). Video game addiction, engagement and symptoms of stress, depression and anxiety: The mediating role of coping. International Journal of Mental Health and Addiction, 14(4), 565-578.

Rigby, S., & Ryan, R. M. (2011). Glued to games: How video games draw us in and hold us spellbound: How video games draw us in and hold us spellbound. AbC-CLIo.

Rujataronjai, W., &Varma, P. (2016).The impact of video game addiction on depression, anxiety, and stress among Thai adolescents, mediated by self-regulation and social support. Scholar: Human Sciences, 8(2).

Smyth, J. M. (2007). Beyond self-selection in video game play: An experimental examination of the consequences of massively multiplayer online role-playing game play. CyberPsychology& Behavior, 10(5), 717-721.

Ilkogretim Online - Elementary Education Online, 2020; Vol 19 (Issue 4): pp. 4869-4886
http://ilkogretim-online.org
doi: 10.17051/ilkonline.2020.04.764892
Sussman, C. J., Harper, J. M., Stahl, J. L., &Weigle, P. (2018). Internet and video game addictions: Diagnosis, epidemiology, and neurobiology. Child and Adolescent Psychiatric Clinics, 27(2), 307-326.

Sussman, S., & Arnett, J. J. (2014). Emerging adulthood: developmental period facilitative of the addictions. Evaluation & the health professions, 37(2), 147-155.

Wei, R. (2007). Effects of playing violent videogames on Chinese adolescents' pro-violence attitudes, attitudes toward others, and aggressive behavior. Cyberpsychology& behavior, 10(3), 371-380.