Increased Aggression and Loneliness as Potential Effects of Pathological Video-Gaming among Adolescents

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The present research was conducted to examine the impact of video games on changing the levels of aggression and loneliness in adolescents. It was hypothesized that the adolescent and male pathological gamers are more aggressive and lonely than non-pathological and female gamers. In this study three scales were used, the first one was to measure the pathological video gaming by Video Game Addiction Scale of Gentile (2006); the second scale was to measure loneliness by R-UCLA Scale of Russell (1996), the third scale was Aggression Scale of Pamela Orpinas (Orpinas, 2001). The sample consisted of 150 adolescents, divided into 76 male and 74 female, age ranged from 12 to 20 years. Results indicated a significant variation between males and females on Video Game Addiction scale. There is also a significant difference between males and females in the loneliness scale, and there is a significant difference between males and females on the aggression scale. It was concluded that pathological video gaming can induce aggression and create feelings of loneliness among adolescents.

Keywords: pathological video game, aggression, loneliness, game addiction

The increase in the purchase of the video games needs a debate on the topic, as it demand an opportunity to others to look into, positive and negative aspects of video gaming. The study shows that one in ten players is a video game addict (Gentile et al., 2011). There is a major difference between "excessive" and "pathological" gaming. The excessive gaming is associated with varying degree of involvement, which is not problematic, but the pathological implies emotionally and socially problematic, and inability to control excessive gaming habits (Lemmens, 2009). According to Gentile, Games are not addictive, the way children use them is not appropriate due to which it causes harm. It's not that the games are addictive. (Gentile, 2009). As defined earlier, the Pathological use of a computer or gaming is not a psychological disorder, but as stated earlier that a small number of people use to play computer games for a prolonged period of time, that they began to show symptoms like withdrawal, loss of control, and interpersonal conflicts (Charlton, & Danforth, 2007; Grüsser, Thalmann, & Griffiths, 2007). However, pathological participation in computer games anticipates the more frequent, and prolonged gaming shifts. Though, there have been a bunch of researches done which are confirming the relationship between excessive gaming and pathological gaming (.e.g., Charlton, 2007; Gentile, 2009).

Long and Brendtro (1993) defined aggression as, "a spontaneous, impulsive act of anger. Aggression is observable behavior which can depreciate, threaten, or hurt a person or destroy an object. It is unplanned and usually occurs during times of stress. Aggression is viewed as a loss of self-control or an impulse break-through". The lack of discipline in adolescents, leads them to lack of reflection and sensitivity to their behavior leads them to show aggressive behavior (Atkins, 1993), and that lack of discipline can be attributed to pathological and excessive video gaming, which ends up in aggressive behavior. In the Cambridge handbook, the loneliness is

defined as, "Loneliness is a situation experienced by the individual as one where there is an unpleasant or inadmissible lack of (quality of) certain relationships. This includes situations, in which the number of existing relationships is smaller than is considered desirable or admissible, as well as situations where the intimacy one wishes for has not been realized." (Giereuld, Tilburg, & Dvkstra, 2006, p. 120).

The researches have been done to explore the above mentioned effects of pathological video gaming, like aggression and loneliness in adolescents. The researches show that, game addiction has negative effects on the adolescents, and game addiction results in increased aggression and violence, as well as the video game addiction is hindering the adolescent's capacities to excel in academics, their concentration span has dropped in the other activities. The excessive video game, also hinders the socialization of video gaming addicts, the researches provides the evidence of the negative effects of video game addiction.

There have been researches done on the topic of video gaming and about the problems and conflicts associated with these faulty gaming habits (e.g., Charlton, 2007; Tejeiro, R. A., & Morán 2002).

In general, adolescents have a tendency to show more symptoms of pathological gaming than any other age group (Griffiths, Davies, & Chappell, 2004; Ha et al., 2007). Despite the positive effects, the negative effects of video game addiction are highlighted as they outnumber the positives of the video game addition. There are a lot of researches done on this topic in the west, and in other parts of the world, but the researches in this area of the world is lacking, as the topic is as important for this part of the world as the excessive video gaming is also a prevalent problem in Pakistan (The Nation, 2012). The present research was done to fulfill the need and develop awareness in the society about the negatives of the excessive video gaming. The awareness about the negatives of the excessive video gaming must be acknowledged by the adolescents and caregivers of the video gaming addicts, to cope with the negative effects of gaming beforehand.

The aggressive outbreaks are the most prevalent consequences to be faced by the families of pathological game addicts. There is a need for further investigation on the topic, the theoretical explanations about how pathological gaming leads toward the aggressive behavior is inevitable. There have been other

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explanation to the pathological gaming leading to increased aggression, which says that the pathological involvement in violent video games constantly induce aggression which may cause increased aggression in player. The reinforcement and reward in response to violent acts in games, lead to desensitization to the aggressive behavior and more inclination towards acting-out (Carnagey, 2005). For instance, in the '*first person shooter*' games (violent genre of gaming) the player will be constantly rewarded for shooting and brutally killing the opponent, not only for high score and other benefits but also for his own survival in the game. As a result these aggressive actions get rewarded, and strength in the player and have increased effect on the aggressive thinking and emotions of player (Carnagey, 2005). To provide further evidence to gaming and aggression, the study indicates that at least for men, thinking about the game just played leads to aggression even after the long time passed in turning the game off (Bushman & Anderson, 2010). Another scenario studied, and it was found that players who play violent video games perceive the actions of the protagonist in an ambiguous story regarding interpersonal conflicts as more aggressive then the participants of non-violent video games (Bushman & Anderson, 2002). However, adolescent with pathological gaming interest in violent video games, is more likely to be acting-out the aggressive behavior, because of the learned behavior that aggression resolves the conflict (Möller, 2009). A meta-analytic analysis regarding the researches done on the topic of video gaming showed that violent video gaming leads to aggression in both young adults and children. Experimental and non-experimental studies with males and females aid this assumption. Studies also show that violent video games causes the increased aggressive thoughts and feelings, as well as pro-social behavior is reduced, along with increased physiological arousal (Anderson & Bushman, 2001). As the previous studies have constantly shown that gaming addiction leads to aggression, the gender difference has also been studied. Which revealed that girls will probably be less involved in violent video games than boys. (e.g., Gentile, 2009; Möller, 2009), but further investigation revealed that the impact of these games on both gender will not vary, and girls and boys will experience same effect on their behavior. The results of the survey showed that boys manifest more frequent involvement in video gaming and are more aggressive (Colwell & Kato, 2003).

In another study about the violent video gaming leading to aggression was done, and it was assumed that violent video games are capable of reducing the aggression by venting aggressive tendencies in gamers (Denzler, Häfner, & Förster, 2011). A research conducted revealed few positive few positive learning outcomes of video gaming (Barlett, Anderson, & Swing, 2009).

However, long duration of gaming, poorer social competence, and superior impulsivity appeared to work as possibility factors for becoming pathological gamers, although depression, anxiety, social phobias, and poorer school performance appeared to act as consequences of pathological gaming (Gentile, 2011). These interpersonal conflicts because of aggression lead to social isolation and loneliness in adolescents. These computer games can offer a substitute to players for friendships and relationships. While the video game play was believed as an alternative for interaction with friends, it did not appear that playing more often lead to fewer friendships (Colwell & Kato, 2003). Mitchell (1985) even noticed an increase in social inter- action within the family after the acquisition of a Videogame. Lin and Lepper (1987), on the other hand, reported no connection between the use of video games and social distancing or isolation. However, Selnow (1984) deduced that

videogame players see the game as a substitute companion, as their electronic friend. Serious users of video games were more likely than less frequent video game players to agree that playing video games is extra fun and more attractive than being with other children (Selnow, 1984).

The researches done related to the present topic are mostly done in other parts of the world, and the emerging video-game addiction in Pakistan, and the scarcity of the researches on this topic are the pillars of the present research. The aggression is the well-researched variable in this type of researches, but loneliness is also added to check the social aspect of video game addiction. The present research focuses on pathological video game addiction as it leads to more aggression and loneliness in adolescents. The research also focuses that male pathological video game addicts are more aggressive and lonelier then female addicts.

Method

The main purpose to do this research was to test the effect of most prevalent activity of today's adolescents on their level of aggression and loneliness. Video gaming is the most prevalent activity of adolescents and kids, as every adolescent is exposed to some form of video game, and video games also have an impact on its players, so this research was conducted to check the level of aggression and loneliness among video game players.

Hypothesis 1: Pathological Video Game addicts have more aggression than non-addicts.

Hypothesis 2: Pathological Video Game addicts are lonelier than non addicts.

Hypothesis 3: Male Pathological Video Game addicts are more aggressive than female addicts.

Hypothesis 4: Male Pathological Video Game addicts are lonelier than female addicts.

Hypothesis 5: Pathological Video gaming predicts the aggressive behavior in adolescents.

Hypothesis 6: Pathological Video gaming predicts the loneliness in adolescents.

Sample

The sample consists of 150 students, selected from Schools. The age range 12-20 years. Two groups of ages were measured. One ranges 12-16, and the other 17-20 years. Equal number of male and female were selected, male (n=76) and female (n=74). The age, gender, education/class of the participants was asked, and they were grouped accordingly.

Procedure: The permissions for the scale were taken to be used in the research study. The sample was selected, and the age groups were made. Then the research questionnaire was administered on the sample, and the games were categorized into violent and non-violent games according to the game content observed by the researcher, and their Entertainment Software Rating Board (ESRB) ratings. The data were collected and then descriptive and inferential analyses were done by Statistical Package of Social Sciences (SPSS) v.17.

Phase-I: The data were collected, and then the most frequently played games were categorized into Nonviolent and Violent games. The categorization was based on the type of game in respect, of explicit and implicit aggression. The game was categorized as Non-Violent which were rated by Entertainment Software Rating

Board (ESRB) as for Everyone, which had no violence, no blood, no bad language, and had an unaggressive story line.

The games categorized in the violent category, were further divided into Mild and Profound. Mild Violent games had mild aggression in them, without any blood and mild language use, and rated by ESRB as E10+ (Everyone 10 and older). The games categorized as Profound Violent games were those rated by the ESRB as T (Teen), M (Mature), AO (Adult Only), which had blood and gore, explicit aggression, and suggestive theme, strong language, intense violence, and sexual content.

Phase-II: The data were collected by administering the scales and the demographic form to be filled by the respondents. Respondents were instructed and were provided help during filling the questionnaire, in case of not understanding the questions. Participants were assured that data will be kept confidential. After collecting data, scoring and analysis was done.

Instruments

The Video Game Addiction Questionnaire (VGA)

The Video Game Addiction Questionnaire is developed by Douglas Gentile (2009). VGA is based on the DSM–IV criteria for pathological gambling. It has the reliability of α=. 77 which represent that scale have reasonable reliability. This scale consisted of 11- items, which measure the pathological video gaming and addiction. Pathological gaming is a persistent need to play or participate in video games to satisfy the addiction related symptoms. Responses ranged from 'Yes', 'No', and 'Sometimes'. 'Yes' and 'Sometimes' considered as 'Yes'. Responses 6 or more 'Yes' and 'Sometimes' considered as Pathological Video Gamer. The questionnaire included the items, like 'Do you become restless or irritable when attempting to cut down or stop playing video games?', 'Do you need to spend more and more time and/or money on video games in order to feel the same amount of excitement?'.

The Aggression Scale

The Aggression Scale developed by Orpinas and Frankowski (2001). The Aggression scale determines self-reported aggressive behavior during the week prior to the study. The Aggression Scale is made of 11 items, and responses can range from 0 times to 6 or more times per week. Responses are additive; thus, the scale can range between 0 and 66 points. Each point signifies one aggressive behavior the student involved in during the week prior to the survey. The scale contains behaviors such as teasing, pushing, and name calling, hitting, encouraging students to fight, kicking, threatening to hurt or hit, and getting angry easily. The scores of the scale have shown high internal consistency in two separate studies (Cronbach's α = .87 and .88) and good stability over time (Orpinas, 2001). The items in the scale included, 'I teased students, to make them angry', 'I threatened to hurt or to hit someone'.

R-UCLA Scale of Loneliness

This scale was developed by Russell. R-UCLA determines three factors of loneliness: loneliness related to (a) "intimate others," (b) "social others," and (c) the "affiliative environment". Loneliness was measured by the revised UCLA Loneliness Scale (Russell 1980). The scale includes20 items, half of which is formulated positively (e.g., ''There are people I feel close to''), while the other is formulated negatively (e.g., ''I feel isolated from others''). Respondents are asked to rate the statements on the occurrence with which they undergo these feelings, using a 4-point Likert-type scale, ranging from 1 (never) to 4 (often). Research has shown the UCLA scale to have convergent validity with other measures of loneliness (Russell , 1996). The internal reliability of the R-UCLA is .89. The Average inter-item correlation was .33. Higher scores on the R-UCLA suggest greater levels of loneliness. The items included in the questionnaire were, 'There is no one I can turn to', 'I feel left out'.

The Form of Demographic Information

In this form the basic information about the age, gender, class/ education of the participants was filled and number of hour games played by the participants, along with the names of most played games to measure the genre of game played, as the genre categorized by the game developer.

Results

SPSS 17.0 was used for the statistical analysis of the data. t-test, ANOVA, and Regression analyses were done on the data to get the results.

Table 1 indicates the reliability of Video Game Addiction Scale, Revised-UCLA Loneliness Scale and Aggression Scale. All the scales are highly reliable.

Table 1

Alpha Coefficient Reliabilities of Video Game Addiction Scale (VGA), Loneliness Scale (R-UCLA) and Aggression Scale.

Scales	No. of items	Alpha Coefficient
Video Game Addiction	11	.85
Revised –UCLA Loneliness Scale	20	.62
Aggression Scale	11	.62

Table 2 indicates the significant differences between male and female on VGA, R-UCLA, and Aggression Scale. Male scored greater ($M = 20.71$) on the video game addiction scale than female ($M =17.01$) so, there is significant difference between male and female ($t = 6.23$, p < .05). Male scored greater ($M = 46.29$) also on the loneliness scale than female ($M = 41.44$) so, there is also

Table 2

Mean Standard Deviation and t-value of Male and Female on Video Game Addiction Scale (VGA), Loneliness Scale (R-UCLA) and Aggression Scale

Scales	Male N =76	Female N =74	t	p	LL	UL	Cohen's d
	Mean (S.D.)	Mean (S.D.)					
VGA	20.71(3.93)	17.01(3.26)	6.23	0.00	-4.85	-2.52	1.02
R-UCLA	46.29(6.45)	41.41(8.02)	4.12	0.00	-7.23	-2.54	0.67
Aggression Scale	19.22 (5.43)	16.11(3.87)	4.04	0.00	-4.64	-1.59	0.66

Table 3
Mean Standard Deviation and t-value of Video Game Addict and Non-addict.

Variables	Addict N = 65	Non-Addict N = 84					
	Mean (SD)	*Mean (SD)*	*t*	*p*	LL	UL	*Cohen's d*
Loneliness	47.17(6.66)	41.31(7.45)	4.98	0.00	3.54	8.18	0.83
Aggression	19.62(5.49)	16.12(3.88)	4.55	0.00	1.98	5.01	0.74

Table 4
Linear Regression Analysis Showing Video Game Addiction as the Predictor of Loneliness (N =150)

Model	B	SE	β	t	p
Constant	28.06	2.69		10.45	.000
Video Game addiction	0.82	0.14	0.44	6.02	.000
R^2= 0.2					
ΔR^2= 0.2					

Table 5
Linear Regression Analysis showing Video Game Addiction as the Predictor of Aggression (N =150)

Model	B	SE	β	t	p
Constant	6.77	1.72		3.95	.000
Video Game addiction	0.58	0.09	0.47	6.51	.000
R^2= 0.22					
ΔR^2= 0.22					

significant difference between male and female ($t = 4.12$, $p < .05$). Male scored greater ($M = 19.22$) also on the aggression scale than female ($M =16.11$), and there is significant difference between male and female (t = 4.04, p < .05).

Table 3 indicates the significant difference between video game addicts and non-addicts on both variables loneliness and aggression. Addicts scored greater (M=47.17) on the loneliness scale than non-addicts (M=41.31) so, there is significant difference between video game addicts and non-addicts (t=4.98, p< .05). Addicts scored greater (M=19.62) also on the aggression scale than non-addicts (M=16.12) so, there is also significant difference between video game addicts and non-addicts (t=4.55, p< .05).

Table 4 shows that Video game addiction predicts Loneliness. The ΔR^2value of .20 indicates that 2% variance in the dependent variable which is loneliness can be accounted for, by the predictor which is the video game addiction with $F = 36.29$, $p <.001$. Video game addiction has significant positive effect on loneliness (β=.44, $p<.001$).

Table 5 shows that Video game addiction predicts Aggression. The ΔR^2value of .22 indicates that 22% variance in the dependent variable which is aggression can be accounted for, by the predictor which is the video game addiction with $F = 42.35$, $p <.001$. Video game addiction has significant positive effect on aggression (β=.47, $p<.001$).

The results of the research confirm the hypothesis, and the same scenario is experienced in Pakistan as it was experienced in other parts of the world. As mentioned by Selnow (1984), the loneliness is found in Pakistani video game addicts as well. As suggested by Lin and Mitchell, the female encountered much lower loneliness then male, and the game addiction is not making me lonelier.

Discussion

This research was conducted to investigate the impact of pathological video game addiction on the adolescents. It was hypothesized that pathological video gaming leads to more loneliness and aggression, then non pathological video gaming.

Reference to the hypotheses I& II (Table 2), it has been established that pathological video game addicts score high on loneliness and aggression. The results indicated that pathological video game addicts had a significant difference between video game addicts and non-addicts on both variables loneliness and aggression. Addicts scored greater (*M*=47.17) on the loneliness scale than non-addicts (*M*=41.31). A direct relation between game addiction and aggression has been found by (Hauge, 2003). Addicted adolescents had higher hostile attribution scores, were significantly more likely to report having been in a physical fight in the last year, and had more arguments with friends and teachers. Selnow (1984) deduced that videogame players see the game as a substitute companion, as their electronic friend. Serious users of video games were more likely than less frequent video game players to agree that playing video games is extra fun and more attractive than being with other children (Selnow, 1984).

Reference to hypotheses III & IV, (Table 2) the results indicate the significant difference between males and females on Video Game Addiction Scale (VGA), Revised-UCLA (R-UCLA), and Aggression Scale. Griffiths and Hunt's research results suggested: One in five adolescents was "dependent" on computer games. Boys played considerably more frequently than girls, and were more likely to be categorized as "dependent" (Griffiths, 1998). In reference to hypothesis V (Table 5), results indicate that Video game addiction positively predicts Aggression. Video game addiction appears to have considerable influence on aggressive behavior among adolescents. There is a lot of work done on aggression and video game addiction with positive results. Likewise, the results on hypothesis VI (Table 4), shows that Video game addiction positively predicts Loneliness. Video game has significantly positive effect on loneliness in adolescents. The game addiction was found to be causing the loneliness in the adolescents, and hampering their socialization skills, as well in Pakistan, as it was hampering in other parts of the world, suggested by the above researches.

The aggression manifested in the video gaming addicts is because of excessive involvement in violent video games, as well as loneliness is because of excessive time spent on playing video

games. The low levels of aggression and loneliness found in the addicts can be because of different aspects; these can be personality traits, environmental circumstances, socio-economic status, and education as well. The aggression and loneliness found in the non-addicts can also be because of the personality traits, the environmental conditions, socio-economic status, and education. The gender differences in the aggression and loneliness, is because of the differences in the level of involvement of the both genders in tasks. The male involvement and level of attention use to be much higher in the activities of their interest then female because of differences in nature, traits, and concentration levels. The results of this research revealed that video game addicts score high on the loneliness scale, as well as on aggression scale. It has been concluded that, video game addicts are more aggressive and lonelier then non- addicts. The results of the research are in line with the researches already done on this topic in western countries.

Limitations And Recommendations

Sample of the study was small, majority of the participants were from Rawalpindi, and Islamabad, and few others represented other areas of Pakistan. Sample of the study does not represent the adolescents of Pakistan as a whole, hence it is suggested that the identical studies should be conducted across different areas of country, as well as other factors that might play significant role should be explored additionally.

The scales administered were in English language, they required the participants to have a good understanding of the English language. It is suggested that these scales should be translated into native language to collect data from participants who can't read and understand English language. The scales will be reliable for the Pakistani society, as the video game addiction is same in all parts of the world, because the all types of games are available everywhere. The criteria of addiction is also same, the scale was developed on the DSM criteria of gambling addiction, which is accepted in Pakistan as well. The Loneliness and Aggression scale showed good reliability, but for further research all the scales can be translated into Urdu language to collect data from population unable to understand the English language. The researchers must be done on the other factors affecting the level of aggression other than gaming, to figure out the proper cause of aggression other than video gaming addiction in adolescents.

The research findings suggest that the caregivers of the adolescents must look into the issue; they must keep an eye on the time spent playing video games. The proper parental guidance in this context is essential to control the adverse effects of the video game addiction.

Conclusion

The present research was conducted to investigate effects of pathological video gaming on adolescents, on the participants who play video games, the frequency of their game play and the game category of their interest were investigated through a questionnaire and three set of scales to measure the pathological involvement in games, aggression level, and feeling of loneliness.

The results of this research conclude that video game addicts are more aggressive and lonelier then non addicts, the significant differences were found between addicts and non-addicts. Results further concluded that male video game addicts are more lonely and

aggressive then non addicts, and it is determined that pathological video game addiction predicts the loneliness and aggressive behavior.

All the results supported our hypotheses, pathological video game addiction is found to be the predictor of loneliness and aggression in adolescents. Also video game addicts scored higher on the two variables of loneliness and aggression than non-addicts.

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