THE EFFECT OF GAME ADDICTION ON AGGRESSIVE BEHAVIOUR AMONG UNIVERSITY STUDENTS IN SAGAING DISTRICT

Nay Zaw Aung[1], Yar Zar Chit[2]

Abstract

The main purpose of this study is to investigate the effect of game addiction on aggressive behaviour among university students in Sagaing District. The quantitative research design and descriptive survey method were used in this study. A total of 554 university students from four universities were selected as participants by using simple random sampling technique. As research instruments, Game Addiction Scale (Lemmens, Valkenburg & Peter, 2009) and Aggression Questionnaire (Faris, Ishak & Ramli, 2016) were used to measure students' game addiction and aggressive behaviour. According to the result of descriptive statistics, it can be said that the students were moderately addicted to playing games. Next, *t* test indicated that there were significant differences in both overall game addiction and in subscales of game addiction between male and female students. Furthermore, significant difference was also found in total aggressive behaviour by gender in which females were significantly higher than male students (t=-2.478, p<0.05). Although there was no significant difference in overall game addiction by university, significant differences was found in total aggressive behaviour among game players. Moreover, Pearson Product Moment Correlation revealed that game addiction of university students was significantly correlated with their aggressive behaviour (r = .342, p<0.001). According to multiple regression analyses, it was revealed that game addiction was key predictor on aggressive behaviour. Therefore, it is hoped that this study may provide a lot of information to the teachers, parents and administrators concerning how the students can be addictive to playing games and the effect of students' game addiction on aggressive behaviour.

Key words: Game, addiction, game addiction, aggressive behaviour

Introduction

The games that children and youths used to play on the playgrounds and streets have been replaced in recent years by the online/offline games played in front of their personal computers and on their mobile phones. This changing culture is becoming widespread around the world and game playing has become extremely popular. Today, people are beginning to assume game playing as one of the type of sports. It is obvious in the evidence that game playing ("eSports") will be a medal sport at the upcoming South East Asian Games (SEA Games) that will be held in the Philippines in 2019.

Actually, proper game playing can offer many advantages to the players. However, when children and youth play the games excessively and uncontrollably, they become addicted to playing games. An addiction to game playing can cause a tremendous amount of consequences to the gamer. In one of the most dramatic stories of online game addiction, in 2005, a 28 year old South Korean man died not by committing suicide, but after playing the game Starcraft at an Internet café for 50 hours straight off. By all reports, the man had not slept properly and had eaten very little in that time. While no autopsy was performed, he was believed to have died from heart failure stemming from exhaustion (Young, 2009).

Today, game addiction is a worldwide phenomenon in every aspect. For example, games playing have become a serious public health concern in China. About 10% of China's more than 30 million internet gamers were said to be addicted (Young, 2009). The particular concern of game addiction is that it can increase the players' aggressive behaviour. According to Gentile and

[1] Senior Assistant Teacher, BEHS Mindaingbin, Pale Township, Sagaing Region
[2] Dr, Assistant Lecturer, Department of Educational Psychology, Sagaing University of Education

Anderson (2003), video games require an individual to be actively involved to progress through the mediums' content. That is, rather than simply consuming the media, individuals must dynamically negotiate within it to remain visually and auditory entertained. Due to this difference, video games are believed to hold a greater potential to instigate aggressive behaviour, at a greater magnitude. Moreover, Kim, Namkoong, Ku and Kim's (2008) research also suggested that game addiction is positively correlated with aggressive behaviour.

Nowadays, many educationists accept that EQ (emotional quotient) is more important that IQ (intellectual quotient) to be a successful and leader although both are fundamental. EQ stands for emotional ability to manage the emotional issues of one's life effectively and positively. Emotion is one sub-type of aggressive behaviour and enabling to control or not their emotional issues have an effect on their aggressive behaviour.

Therefore, in order to help university students who are the future leaders of the country, to become productive citizens, strategies that can help them to reduce their aggressive behaviour should be considered. And then, because of this study, parents, teachers and administrators can see and understand the causes and consequences of game addiction. Moreover, they may also know the root of increasing aggressive behaviour, the relationship between game addiction and aggressive behaviour and the effect of game addiction on aggressive behaviour. For the above reasons, the researcher selected to study game addiction and aggressive behaviour as key concepts because of their importance as mentioned above.

Purpose of the Study

The main aim of the study is to investigate the effect of game addiction on aggressive behaviour among university students in Sagaing District. The specific objectives of this study are as follows:

(1) To explore the game addiction and aggressive behaviour of university students in Sagaing District.

(2) To measure the differences in game addiction of university students by gender and university.

(3) To find out the differences in aggressive behaviour of university students who play games by gender and university.

(4) To examine the relationship between game addiction and aggressive behaviour of university students in Sagaing District.

(5) To explore the effect of game addiction on aggressive behaviour of university students in Sagaing District.

Design and Procedure

Sampling. The participants of this study were third year, fourth year and fifth year students attending in (2018-2019) Academic Year from four universities of Sagaing District. The number of participants was 554 students (279 males, 275 females). The sample was chosen by using simple random sampling technique.

Research Method. The design and method used in this study were quantitative research design and descriptive survey method.

Game Addiction Scale (GAS). The key instrument used to measure game addiction was Game Addiction Scale (GAS) developed by Lemmens, Valkenburg and Peter (2009). The scale for game addiction was composed of seven subscales and it consists of 21 items. The scales of items in the questionnaire were five point Likert-scales. The internal consistency was 0.903 for the whole scale.

Aggression Questionnaire. The key instrument used to measure aggressive behaviour was Aggression Questionnaire (AQ) developed by Faris, Ishak and Ramli (2016). The instrument used to measure aggressive behaviour was composed of four subscales and it consisted of 29 items. The scales of items in the questionnaire were also five point Likert-scales. The internal consistency for the whole scale was 0.850.

Data Collection. As the establishment of the rapport with the participants, it took a few seconds to explain the purpose and importance of their participation and assurance of confidentiality of their responses which would be used only for this research purpose. Then, the questionnaires were distributed and the participants were asked to complete all items in the questionnaires. On average, the participants spent about thirty minutes to complete all items. All of the participants' responses were gathered by survey method in December, 2018.

Data Analysis and Findings

An Analysis of Students' Game Addiction by GAS. In terms of descriptive statistics, mean and standard deviation of students' game addiction were presented in Table 1.

Table 1 Descriptive Statistics for Students' Game Addiction

Variable	Mean	Standard Deviation
Salience	6.89	2.73
Tolerance	7.46	2.63
Mood Modification	8.09	2.51
Relapse	6.71	2.64
Withdrawal	5.25	2.32
Conflict	6.85	2.67
Problem	7.34	2.60
Overall Game Addiction	48.6	14.24

As shown in Table 1, the mean and standard deviation of the students' overall game addiction were 48.6 and 14.24 respectively. Since the sample mean (48.6) is less than theoretical mean (63) in overall game addiction, it can be assumed that the students are moderately addicted to playing games.

Next, among the seven subscales, mean score of mood modification (8.09) is highest and that of withdrawal (5.25) is lowest. Hence, it can be interpreted that the students addicted to game playing because they want a buzz of excitement from playing games (mood modification). However, they don't feel negative emotions even if they don't play games (withdrawal).

Table 2 The Result of Independent Samples *t* test for Game Addiction by Gender

Variable	Gender	Mean	SD	*T*	*df*	*p*	MD
Overall Game Addiction	Male	52.37	14.48	6.301*****	438	0.000	8.23
	Female	44.14	12s.61				

Note: *The mean difference is significant at 0.001 level.

Table 2 showed that there was significant difference between male and female students in game addiction. According to this result, male students are addicted to playing game mores than female students.

After comparing game addiction of students by gender, game addiction of students by university was calculated. The participants of current study were from four universities. To compare students' game addiction by university, descriptive statistics was first used in this study. Table 3 displayed mean and standard deviation for students' game addiction scores from four universities.

Table 3 Mean and Standard Deviation of Students' Game Addiction by University

Variable	University	N	Mean	SD
Overall Game Addiction	University 1	92	49.55	17.30
	University 2	114	46.69	14.57
	University 3	138	49.65	12.63
	University 4	96	48.42	12.70
	Total	440	48.60	14.243

According to Table 3, the mean scores of University 1, University 2, University 3 and University 4 were 49.55, 46.69, 49.65 and 48.42 respectively. Among them, the mean score of University 3 was the highest in game addiction (49.65). And, University 2 had the lowest mean score in game addiction (46.69).

In order to reveal the significant difference in students' game addiction according to University, One-way Analysis of Variance (ANOVA) was worked out. The result of the analysis was displayed in Table 4.

Table 4 The Results of ANOVA for Students' Game Addiction by University

Variable		Sum of Squares	*Df*	Mean Square	*F*	*p*
Overall Game Addiction	Between Groups	654.371	3	218.124	1.076	.359
	Within Groups	88407.620	436	202.770		
	Total	89061.991	439			

Table 4 indicated that there was no statistically significant difference in overall game addiction among four universities. It showed that there was no effect on students' game addiction by university. Thus, it can be concluded that frequency and duration of student's game playing do not differ by the location and type of university.

An Analysis of Students' Aggressive Behaviour by AQ. Aggressive behaviour of students was identified by using four subscales which includes physical aggression, verbal aggression, emotion and hostility. In terms of descriptive statistics, mean, standard deviation, and mean percentage of aggressive behaviour were calculated to analyze data. The results were described in Table 5.

Table 5 Descriptive Statistics for Students' Aggressive Behaviour

Subscales	Mean	SD	Mean Percentage
Physical	20.08	4.76	44.62%
Verbal	11.77	3.20	47.08%
Emotion	18.24	4.93	52.11%
Hostility	20.53	5.02	51.33%
Total (Aggressive Behaviour)	70.62	14.45	48.70%

Table 5 indicated that the mean score and standard deviation of total aggressive behaviour were 70.62 and 14.450 respectively. Since the total mean score (70.62) was lower than the theoretical mean (87) in total aggressive behaviour, it can be said that frequency of students' aggressive behaviour is very rare. According to above table, the mean score of the aggressive behaviour in emotion subscale was the highest (52.11%). Therefore, it can be interpreted students showed their aggressive behaviour by aiming specifically at an individual with the intention of hurting that person's feelings. And, the students had the lowest mean score in the physical subscale among the four subscales of aggressive behaviour because the mean score of it was 44.62%. Thus, it showed that commitment of students' physical aggressive behaviour is very rare. It can be interpreted that students don't use the act of lashing-out bodily with the intent to harm others who are motivated to avoid the harm.

In order to find out whether there was any significant difference in students' aggressive behaviour by gender, independent samples *t* test was conducted. The result was shown in Table 6.

Table 6 The Result of Independent Samples *t* test for Students' Aggressive Behavioiur by Gender

Variable	Gender	Mean	Std. Deviation	Mean Difference	*t*	*p*
Total Aggressive Behaviour	Male	69.39	14.83	-2.478	-2.024*	.043
	Female	71.87	13.97			

Note: *The mean difference is significant at the 0.05 level.

According to Table 6, the result of *t* test indicated that there was significant difference between male and female students in total aggressive behaviour. Thus, it can be concluded that female students possess more aggressive behaviour than male students.

Moreover, in order to know the differences in aggressive behaviour among gamers in terms of gender, the independent samples *t* test was used. The findings were stated in Table 7.

Table 7 The Result of Independent Samples *t* test for Aggressive Behaviour Among Game Players by Gender

Variable	Gender	N	Mean	SD	*t*	*df*	*p*	MD
Overall Game Addiction	Male	238	69.94	13.05	-1.440	438	.150	-1.861
	Female	202	71.80	14.02				

Table 7 indicated that a statistically significant difference was not found among gamers according to gender in total aggressive behaviour. It showed that both male and female students show equal aggressive behaviour during playing the games although aggressive behaviour of female students were higher than male students when they were compared among all participants (both video game players and non-video game players).

After comparing students' aggressive behavior by gender, aggressive behaviour of students by university was calculated. Table 8 displayed mean and standard deviation scores for students' aggressive behaviour from four universities.

Table 8 Mean and Standard Deviation for Game Players' Aggressive Behaviour by University

Variable	University	Mean	SD
Total Aggressive Behaviour	University 1	69.24	14.47
	University 2	67.20	13.21
	University 3	73.83	12.35
	University 4	72.20	13.54
	Total	70.80	13.52

According to Table 8, the mean scores of University 1, University 2, University 3 and University 4 were 69.24, 67.20, 73.83 and 72.20 respectively. University 3 had the highest mean score in aggressive behaviour (73.83). And University 2 possessed the lowest mean score in aggressive behaviour (67.20).

In order to reveal whether there was statistically significant difference in aggressive behaviour of students according to University, One-way Analysis of Variance (ANOVA) was worked out. The results of the analysis were displayed in Table 9.

Table 9 The Results of ANOVA for Game Players' Aggressive Behaviour by University

Variable		Sum of Squares	*df*	Mean Square	*F*	*p*
Total Aggressive Behaviour	Between Groups	3151.426	3	1050.475	5.941*	.001
	Within Groups	77090.164	436	176.812		
	Total	80241.591	439			

Note: *The mean difference is significant at the 0.01 level.

As above mentioned ANOVA result in Table 9, it was found that there was significant difference in total aggressive behaviour among university. It revealed that all the participants' aggressive behaviour differ by university.

To investigate more specifically how students' aggressive behaviour differed in relation to their university, Post Hoc Test was carried out by Tukey HSD method. The results were shown in Table 10.

Table 10 The Result of Tukey (HSD) Test of Multiple Comparison for Game Players' Aggressive Behaviour by University

Variable	University(I)	University(J)	MD (I-J)	*p*
Total Aggressive Behaviour	University 3	University 1	4.587	.052
		University 2	6.624*	.001
		University 4	1.628	.793

Note:*The mean difference is significant at the 0.01 level.

Post Hoc Tukey (HSD) Test revealed that the mean difference between University 3 and University 4 was 6.624 and it was significantly different at α=0.01 level. According to the result, students from University 3 expressed more aggressive behaviour than students from University 2.

Moreover, in order to explore the relationship between game addiction and aggressive behaviour of students, the Pearson Product-Moment Correlation Coefficient was computed. The results were shown in Table 11.

Table 11 Correlation Between Game Addiction and Aggressive Behaviour of University Students

Variables		Aggressive Behaviour
Game Addiction	Pearson Correlation	0.342*****
	Sig. (2-tailed)	.000
	N	440

Note: *Correlation is significant at the 0.001 level.

According to the results, there was a moderate correlation between game addiction and aggressive behaviour (r = .342, p<0.01). Therefore, it was believed that game addiction of the students was positively correlated with aggressive behaviour of the students. This means that if the students play games more frequently, their aggressive behaviour would be higher.

Moreover, to examine how well game addiction can predict aggressive behaviour of university students, simple linear regression was calculated. By seeing the results of simple linear regression, the game addiction of university students significantly predicted to aggressive behaviour. To see vividly, the explanation was presented in the following Table 12.

Table 12 Model Summary for Game Addiction and Aggressive Behaviour

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.404[a]	.163	.149	12.469

a. Dependent Variable: Aggressive Behaviour

According to Table 12, the simple linear regression correlation coefficient (R)=0.404 and adjusted R square was 0.149. Therefore, it can be concluded that 15% of aggressive behaviour can be explained by game addiction. To get more exact information, the results can be seen in the following Table 13.

Table 13 Results of Simple Linear Regression on Game Addiction and Aggressive Behaviour

Model	Unstandardized Coefficient		Standardized Coefficient	*t*	*p*
	B	Std. Error	Beta		
1 (constant)	55.040	2.158		25.500	.000
Game Addiction	0.324	0.043	0.342	7.606	.000

From this Table 13, it was found that the predictor, game addiction, significantly predicted aggressive behaviour. Therefore, the model can be expressed as the following equation.

Aggressive Behaviour = 55.04 + 0.324 Game Addiction

It can be interpreted that if the students play games more frequently, the frequency of their aggressive behaviour will also increase.

In addition, to find out how well students' game addiction subscales predict their aggressive behaviour, simultaneously multiple regression was computed. A combination of seven subscales: salience, tolerance, mood modification, relapse, withdrawal, conflict and problem were expected to determine students' aggressive behaviour. The results were shown in Table 14.

Table 14 Multiple Regression Analysis for Subscales of Game Addiction and Aggressive Behaviour

Variable	Unstandardized Coefficient		Standardized Coefficient	*t*	*p*
	B	Std. Error	Beta		
Aggressive Behaviour (AB)	53.451	2.285		23.395**	.000
Predictor Variables					
Salience (S)	-.601	.348	-.121	-1.728	.085
Tolerance (T)	.270	.397	.052	.679	.497
Mood Modification (MM)	.605	.287	.112	2.109*	.036
Relapse (R)	-.274	.319	-.053	-.859	.391
Withdrawal (W)	.774	.353	.133	2.191*	.029
Conflict (C)	.281	.324	.056	.867	.387
Problems (P)	1.420	.344	.274	4.128**	.000

Among all subscales of game addiction, mood modification, withdrawal and problem were significant predictors of students' aggressive behaviour. But, others dimensions like salience, tolerance, relapse and conflict were not significant predictors of students' aggressive behaviour. Therefore, it can be interpreted that if students play games to get a buzz of excitement from playing games, if they feel unpleasant emotions and/or physical effects when game playing is suddenly reduced or discontinued and if they neglect important activities such as school, work and socializing because of excessive game playing, their aggressive behaviour will be increased. Then, the model equation can be defined as in the following equation.

$$\mathbf{AB = 53.451-0.601S+0.270T+0.605MM-0.274R+0.774W+0.281C+1.420P}$$

Moreover, in order to show the effect of game addiction on the subscales of aggressive behaviour, the values of adjusted R^2 were presented in Figure 1.

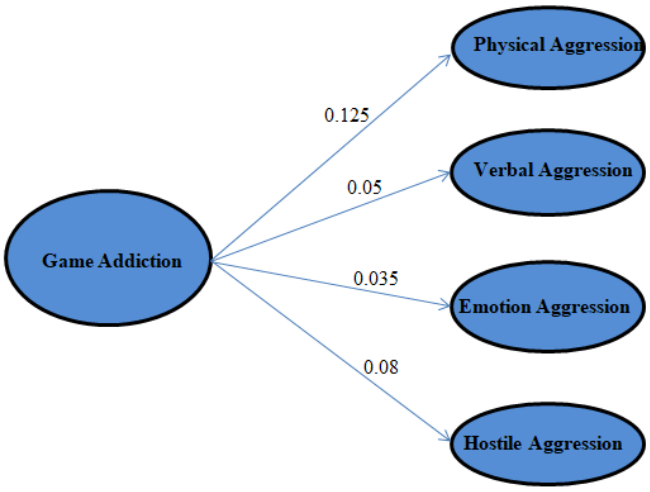

Figure 1 Predictive Powers of Game Addiction on Subscales of Aggressive Behaviour

As shown in Figure 1, game addiction can predict 12.5% (adjusted R^2 = 0.125) on physical aggressive behaviour. Moreover, game addiction can estimate 5% (adjusted R^2 = 0.05) on verbal aggressive behaviour. And then, 3.5% (adjusted R^2 = 0.035) of emotional aggressive behaviour can be explained by game addiction. Finally, the prediction of game addiction on hostile aggressive behaviour is 8% (adjusted R^2 = 0.08). Thus, it can be interpreted that prediction power of game addiction is highest on physical subscale and lowest on emotion subscale among four subscales of aggressive behaviour.

Discussion

Students' Game Addiction. The results from analysis of students' game addiction revealed that students are moderately addicted to playing games. The present study found that there was no significant difference in students' game addiction according to university. Thus, university do not concern with students' game addiction because their appetites to play the games come from their intrinsic motivation and not from the location and type of university. Next, the present study found that students' game addiction differs according to gender. Male students felt more addiction to playing games than female students. Hence, it can be concluded that male students have more probabilities than female students to be addictive to playing games.

Students' Aggressive Behaviour. Furthermore, significant difference was found in aggressive behaviour according to gender. Female students expressed more aggressive behaviour than male students. Specifically, female students were significantly different only in emotional aggressive behaviour (anger) subscale than male students among four subscales of aggressive behaviour. It may be because of the fact that the girls need emotional intimacy in a relationship than boys and this intimacy is often the reason why girls are able to hurt friends' feelings. However, no significance difference was found in aggressive behaviour according to gender when this behaviour is computed among only game players. Thus, it can be interpreted that both male and female students expressed same aggressive behaviour during playing the games. And then, students' aggressive behaviour was affected by university. Students from University 3 expressed more aggressive behaviour than university 1, 2 and 4. This suggests that students from university 3 had more difficulties in controlling their aggressive behaviour and felt dissatisfaction at their conditions and situations.

Relationship between Students' Game Addiction and Aggressive Behaviour: Significant positive correlation was found between students' game addiction and aggressive behaviour. Therefore, it can be said that the more frequently they play the games, the more increase in their aggressive behaviour.

Finally, for the predictors of game addiction to aggressive behaviour, multiple regression was executed continuously. The results showed that 27% of aggressive behaviour of university students can be predicted from only one aggressive game addiction variable (problem, β = 0.274) and 12% of aggressive behaviour of those students can be predicted from only three game addiction variables (salience, β = -.121), (mood modification, β = .112) and (withdrawal, β = .133) except other effects.

Conclusion

It can be witnessed that most adolescents are spending most of their times by playing video games. Therefore, game playing has become an important problem in nurturing youths to have successful lives since it may affect their academic achievement, social interaction and physical health. Therefore, parents and teachers need to consider and manage adolescents' game playing time. Now, it is suggested for reducing game addiction of students, who are encountering the challenges of today's technological age; the instructor should focus to reduce the level of students' game addiction.

According to the above reasons, the following suggestions are recommended for teachers and parents to reduce students' game addiction and aggressive behaviour.

1. Although students' video game playing should not be totally restricted, parents and teachers should guide them to make a balance between their game playing time and their important activities such as school works, social interaction and physical activities.
2. Parents and teachers should establish programs and activities such as social welfare club, sport club and so forth in order to substitute and reduce students' game playing time and should also encourage students to participate in these activities.
3. Parents, teachers and counselors should give emotional support, advice and strategies to the students to solve the problems than handling the situations with aggressive behaviour.
4. Students should understand that extremely game playing can be a barrier in their lives to possess successful lives in their educational and social careers and in achieving healthy life styles.
5. Students should manage their time more effectively to be able to make a balance between their game playing time and important works such as school works, social interactions and physical health.
6. To cope with their aggressive behaviour, students should also try to get advice from their teachers and parents by telling their social and emotional problems and frustration that they are encountering in their daily life activities.

To sum up, results of this study highlight a better understanding of the resources needed to solve the problems between students' game addiction and aggressive behaviour of students. With a better understanding of students' game addiction and aggressive behaviour, parents and teachers may have to take consideration to set limit concerning their children's game playing

time. Moreover, they may also need to consider types of games they should be selected that may have low effect on their children's aggressive behaviour in allowing them to play.

Acknowledgements

Foremost, I would like to offer sincere thanks to Dr. Saw Pyone Naing (Rector, Sagaing University of Education) and Dr. Myat Myat Thaw (Pro-rector, Sagaing University of Education) for their permission to carry out this study.

Secondly, I would like to express my special thanks to Dr. Khin Hnin Nwe (Associate Professor and Head of Department, Department of Educational Psychology, Sagaing University of Education) for her invaluable suggestions, emotional support and guidance throughout this study.

I am most grateful to my supervisor Dr. Yar Zar Chit (Assistant Lecturer, Department of Educational Psychology, Sagaing University of Education). He guided me wisely and flexibly step by step toward success in the research process. My success is due to his wisdom, flexibility, encouragement and trust. I also would like to express my appreciation and respect to all my teachers from Department of Educational Psychology for their help and valuable suggestions throughout this study.

And then, I wish to express my warmest thanks to the rectors and students from Sagaing University, Sagaing Technology University, Sagaing University of Education and Sagaing Cooperative University in Sagaing District for their kind help and energetic cooperation in data collection for this study.

References

Young, K. (2009). Understanding online gaming addiction and treatment issues for adolescents. *American Journal of Family Therapy, 37,* 355-372.

Gentile, D., & Anderson, C. (2003). Violent Video Games: The Newest Media Violence Hazard. In D. Gentile (Ed.), *Media Violence and Children*. Westport, CT: Praeger.

Kim, E. J., Namkoong, K., Ku, T., & Kim, S. J. (2008). The relationship between online game addiction and aggression, self-control and narcissistic personality traits. *European Psychiatry 23 (2008),* 212-218.