

Internet Gaming Disorder among High School Students at First Al-Karkh Education Directorate: The Prevalence and Consequences, Iraq

TawfeeqQadri Meteab^{1*} Arkan Bahlol Naji² Aseel Ghazi Mahmoud³

¹MSc Student, University of Baghdad, College of Nursing, Community Health Nursing Department, Iraq

² Professor PhD, University of Baghdad, College of Nursing, Community Health Nursing Department, Iraq

³ Assist. Professor, University of Baghdad, College of Nursing, Community Health Nursing Department, Iraq

Abstract

Background: Recently, Internet Gaming Disorder (IGD) has been listed in the American Psychiatric Association, which suggests further research to explain this. Internet gaming disorder is the main issue of gaming.

Methodology: A descriptive correlational study design carried out of the period from January 10th, 2020 to February 20th, 2020 to determine the internet gaming disorder among adolescents' students: Prevalence and consequences at high Schools in first Al-Karkh education director, which the study carried out among (533) adolescents' students selected by convenience sample from (8) high schools. The data collected by distribution of questionnaire composed of three parts (Socio demographic data, Internet gaming disorder scale and Health status of adolescent) The data collected after taken of the sample consent and data analyzed by using descriptive and inferential data analysis through using (SPSS).

The results: show that mean of age is (16.93 ± 1.29), (51.4%) were male, (40.5%) at six grade, (56.3%) of them had good general health, the mean of time spent in video gaming is (1843.52 ± 4814.453) minutes, (75.4%) of them experience problematic gaming behavior, and (71.5%) of them had fair level of wellness. Discussion: There is a statistically significant positive correlation between IGT and each of psychological effects on health, emotional health effects, spiritual health effects, and overall wellness. There is a statistically significant difference in students' IGTD among their self-described general health groups

Conclusion: The study concluded that the student spent more time in playing video games, three quarter of students have experience problematic gaming behavior and the wellness of most students is classified as fair. Recommendations: The study recommends that training session for students about the side effect of electronic games, advise adolescents about social interaction with peers and family, the parent must provide emotional support for adolescents' students and provide their needs, also take care of their children and monitoring them, and advise adolescents to decrease the time that spent in electronic game and using physical exercise .

Keywords--- Internet Gaming Disorder, High School, Students, Prevalence and Consequences.

1. Introduction

Diagnostic and statistical manual of mental disorders DSM-5 in 2013 mentioned the term "Internet Gaming Disorder" (IGD), which was described in different terms during previous studies: "Internet Gaming addiction" (Kuss & Griffiths, 2012)

In recent decades, electronic gaming has become an integral part of the life of young people (Rehbein et al., 2015). Increasing the potential for gambling to become a disease for some (Petry & O'Brien, 2013). Since the release of the first

commercial video game in the early 1970's (FAM, 2018), there have been a lot of research into Internet games. According to DSM 5, IGD has 9 diagnostic criteria (regarding video games): (1) excessive worry; (2) withdrawal symptoms; (3) developing tolerance;(4) failing attempts to control play;(5) loss of interest in(other) previews.

In a survey in the Netherlands targeting different age groups, Lemmens, Valkenburg and Gentile (2015) found an overall prevalence of 5.5% for 13-20-year-olds and a prevalence of 5.4% for adults. More than 90 % of children and adolescents in the US now play video games and play a lot of time (Rideout, Foehr, & 2017). In Lee and Kim's (2017) survey of 1,556 studies (51% male) in five Korean cities, a gender comparison found that men were three times more addicted to online gamers than women Overall, men over all age groups have devoted more time and effort to gaming on computers than women, leading some to suggest that computers are toys for men (Vollmer et al . 2014).

Several factors may contribute to the creation of internet dependency. Age is significant because young people are more likely to use the internet than other age groups (Peukert, Sieslack, Barth &Batra, 2010). Smartphones , tablets and machines are all widely available to young people, leading to the proliferation of internet addiction (Kawabe, Horiuchi, Ochi, Oka, & Ueno, 2016). Sex may also influence how the internet and the numerous internet addictions formed by teens (Andreassen et al . , 2016). The prevalence of Internet addiction is typically the greatest among teenagers. Online bullying can be a risk factor for some adolescents and adults. Because of versatility and fast internet connectivity for teens with smartphones, users can induce dependency effects. There have been significant relationships between cyber bullying and teenage hopelessness. This discovery is surprising because of the detrimental use of the Internet (Dilmaç, 2017).

The consumer may have negative effects such as school failure, reproach or lack of productivity at work and/or disagreements with his / her family or girlfriend. Negative moods (i.e. usually irritability, depression and boredom) surround occasions in which a person is not or can play less. Other mood changes related to poor diets and lack of sleep may amplify such feelings, leading to the users being separated from the real world and seeking to play the soothing effects of the game (Hawi, Samaha, & Griffiths, 2018). Conductual and perceptual changes that produce harmful effects can be interpreted as being triggered by functional brain changes in the context of pathological gaming. Reduced auto-regulation by altered brain conditions leads to a priority of gaming stimulation, which develops a long and inflexible gaming routine that significantly interferes with normal functioning, including serious disregard of oneself, other people and the real world. Briefly, gaming is a fact (Wakil el al ., 2017).

Park, Chun, Cho, and Kim, (2018) reported on the brain of Internet gaming addicts, finding evidence they were damaged when compared to the healthy individuals . Also found were abnormalities of the brain when compared to the group who . The data pointed to Internet gaming addiction participants as having abnormalities that need to be studied more . struc-tural and functional changes within the brain seem to influence thought pat-terns with IGA . Neuroimaging shows brain alteration due to playing games over the Internet obsessively. Intensive gaming has been shown to change the heart, brain and other autonomic parts of the body. The autonomic changes from extended time spent gaming can be negative due to long gestated hours playing games, lack of sleep, which can cause mental health is-sues (Kim et al., 2016).

The study aims to:

1. Determine the level of Internet Gaming Disorder, its prevalence and consequences.
2. Identify the association between a student's age, time spent in playing internet games, and perceived wellness and Internet Gaming Disorder
3. Investigate the differences in Internet Gaming Disorder between the groups of student's gender, grade and general health status.

2. Methodology

2.1 Ethical considerations of the study

Permission has been obtained first directorate of Al-Karkh education in Baghdad City to ensure their acceptance, cooperation and to arrange for the administrations of schools to do study as well students who have agreed to participate in the study.

2.2 Design and setting of study

A descriptive correlational design was conducted on adolescent boys and girls having an internet gaming disorder who age 15-20-years. The study was conducted for the period from January 10th, 2020 to February 20th, 2020 which the study carried out in Al-Karkh education in Baghdad City with 24 schools.

2.3 Sampling and sample size:

The study applied a non-probability convenient sampling method used to select study participants. The minimum required sample size would be 533. The minimum required for boys is 255, and the minimum required for girls is 262 through instrument of self-report.

2.4 Instrument of study

The researchers used in the study Instrument included through 3 part (Socio-demographic Sheet, Internet gaming disorder and Health status of adolescent questionnaire)

2.5 Statistical Analysis

The data of the present study is analyzed through using the Statistical Package of Social Sciences (SPSS) version (24). The following statistical data analysis approaches were used in order to analyze data and assess the results of the study. The researchers used descriptive and inferential data analysis to obtain results.

3. Result's and discussion

3.1. Results and Discussion of the Adolescents Demographic Characteristics

In Regarding to the age groups, the findings shown in table (1) that the dominant age group of study sample is within (15 - 20) years old of age group, this result agrees with a study conducted by (Hawi, Samaha, & Griffiths, 2018) study (Internet gaming disorder in Lebanon: Relationships with age, sleep habits, and academic achievement. Journal of behavioral addictions) who report age of the participation is (aged 15-19 years)

Also agrees with a study conducted by (Carras et al., 2018) study (When addiction symptoms and life problems diverge: A latent class analysis of problematic gaming in a representative multinational sample of European adolescents. European Child & Adolescent Psychiatry) who report age of the participation is (aged 14-18 years). and this result agrees with a study conducted by (González-Bueso et al., 2018) study (Internet gaming disorder in adolescents: Personality, psychopathology and evaluation of a psychological intervention combined with parent psycho-education) who report age of the participation is (aged 12-21 years). Throughout the course of the present study table (1), indicates that more than half of the study sample were males, it has been mentioned that males are more affected than females. This result agrees with (Beard et al., 2017) study (Age of initiation and internet gaming disorder: The role of self-esteem. Cyberpsychology, Behavior, and Social Networking) that reported that most of his study sample were males (64.4%) and remaining were females and agrees with (Wu et al., 2016) study (Positive outcome expectancy mediates the relationship between peer

influence and Internet gaming addiction among adolescents in Taiwan) who reported that majority of the samples were males 1,055 (50.1%). Also agrees with a study conducted by (Sun et al., 2019) study (Sex differences in resting-state cerebral activity alterations in internet gaming disorder) who indicated that 30 males and 23 females.

This finding disagreed by (Tas et al., 2017) study (Relationship between Internet Addiction, Gaming Addiction and School Engagement among Adolescents) which reported that most sampling from female 225 (61.6%) and 140 (38.4%) of male and disagrees with (Liang, Zhou, Yuan, Shao, & Bian, 2016) study (Gender differences in the relationship between internet addiction and depression: A cross-lagged study in Chinese adolescents) which indicated that the number of sample 1715 include (879) of female and (836) of male.

In regarding to the classes, the findings shown in table (1) that the classes of study sample within (Fourth, Fifth and Sixth), The majority of the sample was from the fourth grade at (216), the fifth grade at (140) and for the sixth grade at (177). This result agrees with a study conducted by (Hawi et al., 2018) study (Internet gaming disorder in Lebanon: Relationships with age, sleep habits, and academic achievement) which report the sample from grade Fourth, Fifth and Sixth.

3.2. Results Discussion of the Participants' self-described general health

In regard to the adolescents' students description of their general health in figure (1). More than half of adolescent describe their health is good health status. The adolescent describes himself as having good health as a result of self-concept and self-image in addition to being in an active and energetic period of time, so he turns a blind eye to some of the problems he has and does not feel at times

3.3. Results Discussion of the adolescents Time spent in video-gaming

In regard to the adolescent time spent in playing video games in table (2). Around a fifth reported that they spend 430-840 minutes per week in video-gaming. Hawi et al., (2018) found that the average time spent online gaming of the CGG increased from 1.7 hr/day on weekdays to 3.4 hr/day on weekends. The average time spent online gaming at weekends of the CGG (3.4 hr/day) matched that of IGDG on weekdays (3.4 hr/day). This finding supported our study Torres-Rodríguez, Griffiths, Carbonell, & Oberst (2018) in their study (Internet gaming disorder in adolescence: Psychological characteristics of a clinical sample) found that the adolescents reported an average of 47.51 hr of playing video games per week, whereas their relatives reported their children as playing an average of 49.45 hr per week. This finding supported the present study finding Evren, Evren, Dalbudak, Topcu, & Kutlu (2020) in their study (Psychometric validation of the Turkish Ten-Item Internet Gaming Disorder Test (IGDT-10) found that 48.9% of the sample using gaming more than usual in weekends. This finding supported the present study finding.

3.4. Results Discussion of the Participants' distribution according to overall wellness

Regarding to the adolescents' students wellness in figure (2). About two third of students classified as fair level of wellness. These results are due to the active and dynamic adolescence period in which the teenager feels that he is controlling everything and this result is consistent with the adolescents' description of their health condition in the figure (2)

3.5. Results Discussion of the Correlations among study variables

In regard to correlation between the adolescents age, time spent in gaming, internet game disorder and wellness in table (3). There is no significant correlation between age, IGD and wellness. Hawi et al., (2018) found that there is significant statistical relationship between the adolescents age and IGD. This finding in-consisted with the present study

finding. Taechoyotin et al., (2020) found that there is no significant statistical relationship between the sample age and IGD. This finding in same line with our study. Evren, Dalbudak, Topcu, & Kutlu (2020) found that there is no significant statistical relationship between the sample age and IGD. This finding in same line with our study.

There is significant correlation between time spent in gaming, and IGD. While, there is no significant correlation between time spent in gaming, and wellness. Evren, Evren, Dalbudak, Topcu, & Kutlu (2020) found that there is significant statistical relationship between the time spent in video gaming and IGD. This finding in same line with our study. There is significant correlation between IGD, psychological effects, emotional effects, spiritual effects and wellness. The researcher sees that the IGD is a psychological status and this condition effected by some factors like spiritual, and emotional adolescents' status. Therefore, there are significant relationship between the IGD and psychological effects, emotional effects, spiritual effects and wellness

3.6. Results and Discussion of the Difference in IGDT and characteristic of study.

In regard to the difference in IGDT between adolescent gender group in table (4). There is no statistically significant difference in IGDT between gender groups. Hawi et al., (2018) found that there is no significant statistical relationship between the adolescents gender and IGD. This finding consisted with the present study finding. Evren, Dalbudak, Topcu, & Kutlu (2020) found that there is significant statistical relationship between the sample gender and IGD. This finding in consisted with our study. Taechoyotin et al., (2020) found that there is significant statistical relationship between the sample gender and IGD. This finding in consisted with our study.

Regarding to the difference between IGDT among students' grade groups .There is no statistically significant difference in students' IGDT among grade groups. Regarding to the difference between IGTD among students' self-described general health groups in table (4). There is a statistically significant difference in students' IGTD among their self-described general health groups (p-value = .000). This finding result due large percent of students had good health status. It may be effect on the difference between the IGD and students' self-described general health groups.

4. Conclusions

1. Most of adolescents' students are males and at age 16 years, and at fourth grade. Half of students describe their general health as good health status
2. Students spend 1843.52 minutes at playing electronic game at week
3. Three quarter of students have experience problematic gaming behavior
4. The wellness of most students is classified as fair.
5. There is a statistically significant positive correlation between IGT and each of psychological effects on health, emotional health effects, spiritual health effects, and overall wellness.
6. There is no statistically significant difference in IGTD between gender and grade groups.
7. There is a statistically significant difference in students' IGTD among their self-described general health groups.

5. Recommendations

1. Training session for students about the side effect of electronic games and behavioral problems of it
2. Advise adolescents about social interaction with peers and family
3. The parent must provide emotional support for adolescents' students and provide their needs, also take care of their children and monitoring them
4. Help adolescents' students to achieve their identity

5. Advise adolescents to decrease the time that spent in electronic game and using physical exercise
6. Encourage them to get fun and leisure time away from electronic games.

Table 1. Participants' sociodemographic characteristics (N = 533)

Variable	Frequency	Percent
Age (Years)		
15	57	10.7
16	171	32.1
17	145	27.2
18	95	17.8
19	41	7.7
20	24	4.5
Mean (SD)	16.93	1.29
Gender		
Male	274	51.4
Female	259	48.6
Grade		
Fourth	216	40.5
Fifth	140	26.3
Sixth	177	33.2

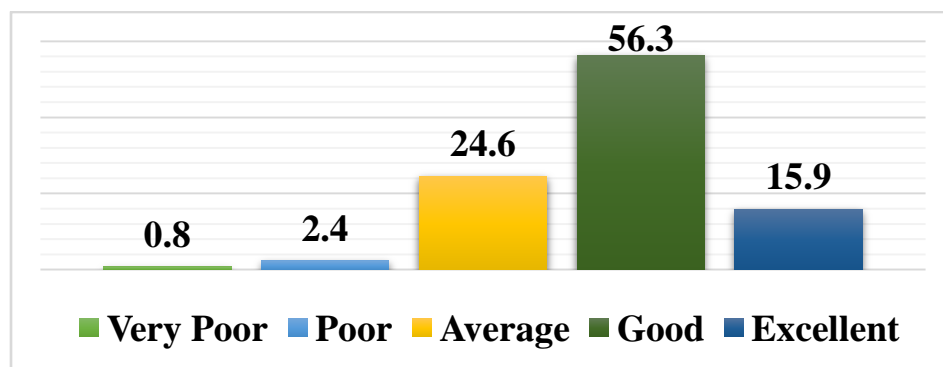


Figure 1. Participants' self-described general health

Table 2. Time spent in video gaming

Weekdays time spent in video gaming (Minutes)	Frequency	Percent
60-420	91	17.1
430-840	110	20.6
850-1280	83	15.6
1290-1700	62	11.6
1710-2120	40	7.5
2130-2550	45	8.4
2560-2960	26	4.9
3000-3420	16	3.0
3430-3850	14	2.6
3860-4280	10	1.9
4300-4720	5	0.9
4730-5150	10	1.9
5160-5580	7	1.3
5600-6020	3	0.6
≥ 6030	11	2.1
Mean (SD)	1843.52	4841.45

Table 3. Correlations among study variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Age	-									

2. Time spent in gaming	-.052	-								
3. IGT	.011	.128**	-							
4. Psychological Effects	.041	.046	.117**	-						
5. Emotional Effects	-.034	-.007	.213**	.314**	-					
6. Social Effects	.016	-.033	-.062	.290**	.192**	-				
7. Physical Effects	.070	-.056	.040	.188**	.185**	.291**	-			
8. Spiritual Effects	-.041	-.022	.104*	.309**	.287**	.258**	.262**	-		
9. Cognitive Effects	-.038	-.020	.019	.257**	.250**	.268**	.298**	.397**	-	
10. Wellness	.005	-.027	.106*	.606**	.576**	.640**	.610**	.662**	.657**	-

*.Correlation is significant at the 0.05 level (2-tailed).

**..Correlation is significant at the 0.01 level (2-tailed).

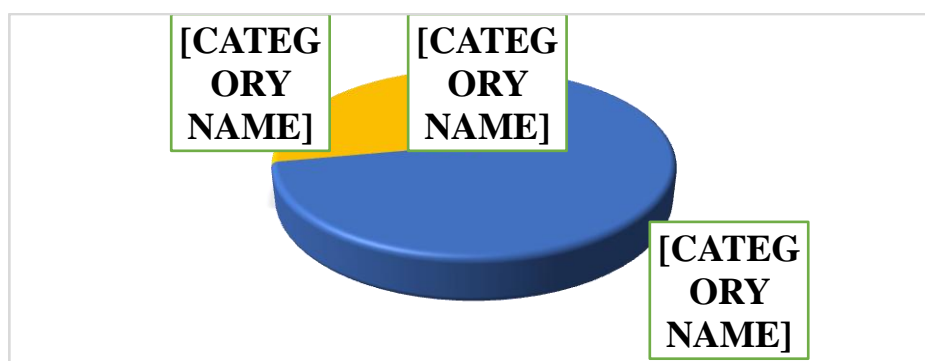


Figure 2. Participants' distribution according to overall wellness

Table(4): differences significance in IGTD among students related to (gender, grade and general health)

groups	Statistical test	Value of test	Df	p.value	Statistical significant
gender	t-test	-.178	531	.859	N.S
grade	ANOVA	1.593	532	0.053	N.S
general health	ANOVA	2.736	532	.000	S

ANOVA:Analysis of Variance: degree of freedom, N.S: non-significant, S: significant

Reference

1. American Psychiatric Association (2013) Diagnostic and Statistical Manual of Mental Disorders (DSM-5), 5th edn., Washington, D.C.: American Psychiatric Association.
2. Andreassen, C. S., Billieux, J., Griffiths, M. D., Kuss, D. J., Demetrovics, Z., Mazzoni, E., & Pallesen, S. (2016). The relationship between addictive use of social media and videogames and symptoms of psychiatric disorders: A large-scale cross-sectional study. *Psychology of Addictive Behaviors*, 30(2), 252–262.
3. Beard, C. L., Haas, A. L., Wickham, R. E., & Stavropoulos, V. (2017). Age of initiation and internet gaming disorder: The role of self-esteem. *Cyberpsychology, Behavior, and Social Networking*, 20(6), 397–401.

4. Colder Carras, M., & Kardefelt-Winther, D. (2018). When addiction symptoms and life problems diverge: a latent class analysis of problematic gaming in a representative multinational sample of European adolescents. *European child & adolescent psychiatry*, 27(4), 513–525.
5. Dilmaç, B. (2017). The relationship between adolescents' levels of hopelessness and cyberbullying: The role of values. *Educational Sciences: Theory and Practice* 17:1119-1133.
6. Evren, C., Evren, B., Dalbudak, E., Topcu, M., & Kutlu, N. (2020). Psychometric validation of the Turkish Ten-Item Internet Gaming Disorder Test (IGDT-10). *Dusunen Adam The Journal of Psychiatry and Neurological Sciences*, 33:19-28.
7. González-Bueso, V., Santamaría, J. J., Fernández, D., Merino, L., Montero, E., Jiménez-Murcia, S., Del Pino-Gutiérrez, A., & Ribas, J. (2018). Internet Gaming Disorder in Adolescents: Personality, Psychopathology and Evaluation of a Psychological Intervention Combined With Parent Psychoeducation. *Frontiers in psychology*, 9, 787. <https://doi.org/10.3389/fpsyg.2018.00787>
8. Hawi, N. S., Samaha, M., & Griffiths, M. D. (2018). Internet gaming disorder in Lebanon: Relationships with age, sleep habits, and academic achievement. *Journal of behavioral addictions*, 7(1), 70-78.
9. Kawabe, K., Horiuchi, F., Ochi, M., Oka, Y., & Ueno, S. I. (2016). Internet addiction: prevalence and relation with mental states in adolescents. *Psychiatry and clinical neurosciences*, 70(9), 405-412.
10. Kuss, D. J., & Griffiths, M. D. (2012). Internet gaming addiction: A systematic review of empirical research. *International Journal of Mental Health and Addiction*, 10(2), 278-296.
11. Kim, N., Hughes, T. L., Park, C. G., Quinn, L., & Kong, I. D. (2016). Altered autonomic functions and distressed personality traits in male adolescents with internet gaming addiction. *Cyberpsychology, Behavior, and Social Networking*, 19(11), 667-673.
12. Lee, C., & Kim, O. (2017). Predictors of online game addiction among Korean adolescents. *Addiction Research & Theory*, 25(1), 58-66.1), 205-212.
13. Lemmens, J. S., Valkenburg, P. M., & Gentile, D. A. (2015). The Internet gaming disorder scale. *Psychological assessment*, 27(2), 567.
14. Liang, L., Zhou, D., Yuan, C., Shao, A., & Bian, Y. (2016). Gender differences in the relationship between internet addiction and depression: A cross-lagged study in Chinese adolescents. *Computers in Human Behavior*, 63, 463-470.
15. Park, C. H., Chun, J. W., Cho, H., & Kim, D. J. (2018). Alterations in the connection topology of brain structural networks in Internet gaming addiction. *Scientific reports*, 8(1), 1-9.
16. Petry, N. M., & O'Brien, C. P. (2013). Internet gaming disorder and the DSM-5. *Addiction*, 108(7), 1186-1187.
17. Peukert P., Sieslack S., Barth G., & Batra, A. (2010). Internet and computer game addiction: Phenomenology, comorbidity, etiology, diagnostics and therapeutic implications for the addicts and their relatives. *Psychiatrische Praxis*, 37 (5), 219–224.
18. Rehbein, F., Petry, N. M., Ko, C. H., & O'Brien, C. P. (2015). Internet gaming disorder in the DSM-5. *Current psychiatry reports*, 17(9), 72.
19. Rideout, V. J., Foehr, U. G., & Roberts, D. F. (2017). *Generation M 2: Media in the Lives of 8-to 18-Year-Olds*. Henry J. Kaiser Family Foundation.
20. Sun, Y., Wang, Y., Han, X., Jiang, W., Ding, W., Cao, M., ... & Zhou, Y. (2019). Sex differences in resting-state cerebral activity alterations in internet gaming disorder. *Brain Imaging and Behavior*, 13(5), 1406-1417.
21. Taechoyotin, P., Tongrod, P., Thaweerungruangkul, T., Towattananon, N., Teekapakvisit, P., Aksornpusitpong, C. (2020). Prevalence and associated factors of internet gaming disorder among secondary school students in rural community, Thailand: a cross-sectional study. *BMC Res Notes*, 13:11
22. Tas, I. (2017). Relationship between Internet Addiction, Gaming Addiction and School Engagement among Adolescents. *Universal Journal of Educational Research*, 5(12), 2304-2311.
23. Torres-Rodríguez, A., Griffiths, M. D., & Carbonell, X. (2018). The treatment of Internet gaming disorder: A brief overview of the PIPATIC program. *International Journal of Mental Health and Addiction*, 16(4), 1000–1015
24. Vollmer, C., Randler, C., Horzum, M. B., & Ayas, T. (2014). Computer game addiction in adolescents and its relationship to chronotype and personality. *Sage Open*, 4(1), 2158244013518054.
25. Wakil, K., Omer, S., & Omer, B. (2017). Impact of computer games on students GPA. *European Journal of Education Studies*.
26. Wu, J. Y. W., Ko, H. C., Wong, T. Y., Wu, L. A., & Oei, T. P. (2016). Positive outcome expectancy mediates the relationship between peer influence and Internet gaming addiction among adolescents in Taiwan. *Cyberpsychology, Behavior, and Social Networking*, 19(1), 49-55.