

A Study of the Correlation between Computer Games and Adolescent Behavioral Problems

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Original Article

Abstract

Background: Today, due to developing communicative technologies, computer games and other audio-visual media as social phenomena, are very attractive and have a great effect on children and adolescents. The increasing popularity of these games among children and adolescents results in the public uncertainties about plausible harmful effects of these games. This study aimed to investigate the correlation between computer games and behavioral problems on male guidance school students.

Methods: This was a descriptive-correlative study on 384 randomly chosen male guidance school students. They were asked to answer the researcher's questionnaire about computer games and Achenbach's Youth Self-Report (YSR).

Findings: The Results of this study indicated that there was about 95% direct significant correlation between the amount of playing games among adolescents and anxiety/depression, withdrawn/depression, rule-breaking behaviors, aggression, and social problems. However, there was no statistically significant correlation between the amount of computer game usage and physical complaints, thinking problems, and attention problems. In addition, there was a significant correlation between the students' place of living and their parents' job, and using computer games.

Conclusion: Computer games lead to anxiety, depression, withdrawal, rule-breaking behavior, aggression, and social problems in adolescents.

Keywords: Computer games, Social behavior, Adolescents

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Introduction

Behavioral problems are prevalent and debilitating disorders for teachers, families, and the very children and adolescents causing many issues, which are associated with high rates of social problems.¹ Behavioral problems is referred to the circumstance whereby emotional and behavioral responses of an individual is different to cultural norms, age, or ethnicity; so that it can negatively affect the individual's academic performance, self-care, social relations, personal adjustment, and adaptive behavior in the classroom and workplace. Behavioral problems cause unacceptable responses to the environmental stressors by children or adolescents, and are identified by the data obtained from different sources of an individual's emotional or behavioral functions.² Such a disorder is characterized by persistent aggressive behavior and violating the rights of others.³ Children with behavioral problems have severe peer rejection, poor academic performance, and a gradual increase in aggressive behavior and mood disorders, and they are prone to mood and social personality disorder, substance abuse and delinquency and rule-breaking in adulthood.⁴

Achenbach divided behavioral problems into 10 categories including anxiety, depression, somatic complaints, social problems, thought problems, attention problems, law breaking, aggressive behavior, internalizing and externalizing problems. Moreover, Achenbach divided other problems into a separate class. Most children and adolescents sometimes show emotional and behavioral problems, but in many cases, these behaviors are temporary, and do not last and match disorder criteria. However, due to lack of unit definitions, the estimated prevalence rate of behavioral problems is associated with some difficulties.⁵ The prevalence rate of behavioral problems among the school-aged population has been reported to be 0.5% to 20% in different studies.⁶ The prevalence rate of behavioral problems among elementary school student is estimated to be 20.4%.⁷

According to the clinical classifications of experience-based system scale, the prevalence rate of behavioral problems is 20.3%. The highest and lowest frequency is dedicated to depression and thinking problems, respectively. Achenbach et al. reported the prevalence rate of behavioral

disorders among children and adolescents as the following: attention deficit hyperactivity disorder (ADHD) 3-5%, stubbornness and disobedience 5-10%, conduct disorder 1-16%, generalized anxiety disorder 2.9 to 14%, panic behavior 5%, obsessive disorder 1.9%, depression 0.4 to 2.5%, and dysthymia 0.6 to 1.7%.⁵

The most prevalent problems observed among youths and adolescents with behavioral problems are aggression, anxiety, and depression. The proportion of males to females is five to one or more. In general, the tendency of boys toward aggressive and disruptive behaviors is more than the girls.⁸

One of the factors influencing the incidence of behavioral problems in children and adolescents are computer games. Nowadays, computer games have an important role as a hobby among children and adolescents. Researchers have found that such games can play a false emotional role and negatively affect the mental health of the players. In the early 1990s, there was an increase in studies concerning this issue due to the increasing growth of games with violent music and graphical motions.⁹

Computer games have changed to one of the leading forms of global media productions which promote war and violence. Children and adolescents fill their time with playing these games, and are affected by and learn from them. These impacts might be either positive or negative depending upon the objectives of the designers, genre of game, and the allocated time. However, most studies have concentrated on negative impacts due to the concerns about the side effects of the computer games.¹⁰

Studies have suggested that approximately 70% to 90% of American adolescents and youths, 60% to 90% of Finnish youth, and the same proportion of adolescents in other countries have fun with computer games.^{11,12} The results of a study on 333 male students in third grade of guidance school indicated that those who spend more time on playing these games show more forms of aggressive behaviors. 72.1% of students scheduled the games as a part of their weekly entertainment and programs, and 27.9% did not play them.¹³ Studies confirmed the correlation between playing computer games and decreased social participation rate.¹⁴ Furthermore, it has been

identified that some horror games cause anxiety disorders and panic symptoms (e.g. nightmares) in children.¹⁵ Findings of another study showed that 53.4% (798 subjects) of high-school students in Zanzan are computer game users, of whom 48.1% are males and 38.9% are females. In total, 42.8% of them played the games over 3 hours per week, and 10.6% played less than 3 hours per week. 58.2%, 53.3%, and 48.6% of high-school students of rich, semi-rich, and deprived residential regions used computer games, respectively; and statistically there was no significant difference between them.¹⁶

Parents and adolescents mentioned stress, academic failure, conflict, game addiction, violence, and learning disabilities as the negative effects of computer games. Moreover, they mentioned strengthening of the mind, entertainment, fighting spirit, strengthening the English language, and their educational dimensions as the positive effects of computer games.¹⁷ Results of studies have illustrated that following a participation in computer programs, and also participation in a 12-hour period of computer games, attention of children with ADHD increased and their reaction time was shortened.¹⁸⁻²⁰ Moreover, the results indicated a significant and direct correlation between maternal employment and computer game dependency.²¹

Given that adolescents are the most vulnerable social group, investigating their behavioral problems seems necessary. Moreover, since behavioral problems can affect all the socio-individual aspects of the life of adolescents and youths, and considering the importance of planning for the promotion of youth mental health it is necessary that we have an understanding of the rate and diversity of issues and factors affecting them.

Methods

This was a descriptive- correlative study in which the study population included all the male guidance school students in Kerman, Iran, in 2010-2011. The required sample was determined according to the sample size and using Cochran's formula ($n = 384$) through convenient random sampling method. Data analysis was done using the Statistical Package for Social Sciences (SPSS 20.0, SPSS Production Facility, Chicago, Illinois, USA), bivariate regression, and analysis of variance (ANOVA).

Research Tools

A researcher-made questionnaire for computer games and Achenbach's Youth Self-Report (YSR) were used for data collection.

YSR

YSR is a self-report scale for behavioral problems of youth made by Achenbach in 1991. The youth behavioral problem form is a self-report scale for adolescents with the minimum education equal to the fifth elementary grade (ages 11-18) to answer during 15 minutes. This scale encompasses competencies and syndromes. The competencies section is comprised of four parts (i.e. activities, academic performance, social functioning, and overall competence). The syndrome scale included withdrawn/depression (8 questions), somatic complaints (10 questions), depression/anxiety (13 questions), social problems (11 questions), thinking problems (12 questions), attention problems (9 questions), rule-breaking problems (15 questions), aggressive behavior (17 questions), and also the subscale of other behavioral problems (10 questions) (a set of heterogeneous questions on different issues such as oppositional defiant disorder, disobedience, lack of eating, fear of school, nail biting, nightmares, overeating, overweight, anorexia, and etcetera). The overall reliability of the test using Cronbach's Alpha obtained 0.94. Furthermore, the reliability of the subscales of withdrawn/depression, somatic complaints, depression/anxiety, social problems, thinking problems, attention problems, rule-breaking problems, aggressive behaviors, and also other behavioral problems were 0.84, 0.86, 0.78, 0.74, 0.71, 0.67, 0.74, 0.85, and 0.81, respectively. The reliability of the entire test using split-half reliability obtained 0.82.²²

Computer Game Questionnaire

This scale included 8 questions assessing the type and rate of using computer games. The questionnaire's reliability obtained 0.92 using test-retest, and its validity obtained 0.87 using numerical sigma method.

Results

The results showed that 304 students (76.16%) had computer game devices at home and 80 students (20.84%) had no device at all. 14 students (3.64%)

have not played these games yet, 43 students (11.2%) played them several times by accident, and 327 students (85.16%) played them as their major entertainment and program. 7 students (1.82%) played the games for less than 3 months, 22 students (5.72%) 3 to 6 months, 27 students (7.04%) 6 to 12 months, 105 students (27.34%) 1 to 2 years, and 223 students played (58.08%) for over 2 years. Of the study subjects, 7 students (1.82%) used Nintendo, 12 students (3.13%) PSP, 13 students (3.38%) PlayStation, 10 students (2.6%) SEGA, 53 students (13.81%) X-Box, 120 students (31.25%) SONY, and 169 of them used a Personal Computer (44.01%). In addition, 37 of them (9.63%) used to play intellectual and mind games, 64 students (16.66%) sport games, 105 students (27.35%) action and violent games, 102 students (26.56%) strategic and war games, 45 students (11.72%) entertaining, fun, and fiction games, and 31 of them (8.08) did not respond to this question. The number of hours students played computer games per day is illustrated in table 1.

Bivariate linear regression test was used to measure the correlation rate of using computer games and behavioral problems, and the related subscales. The results of table 2 and table 3 show the correlation coefficient between the rate of using

computer games and behavioral problems, and the related subscales (withdrawn/depression, somatic complaints, depression/anxiety, social problems, thinking problems, attention problems, rule-breaking problems, and aggressive behaviors). Given the significant level ($P < 0.050$), the rate of using computer games had a significant correlation with withdrawn/depression, depression/anxiety, social problems, rule-breaking problems, and aggressive behaviors. Considering R^2_{adj} , it can be stated that 25% variance of the behavioral problem in students is predicted based upon the amount they use these games. Furthermore, 17% of aggressive behaviors, 15% of withdrawn/depression, and 12% of depression/anxiety, 9% of rule-breaking problems, and 6.4% of social problems are predicted based on amount they use computer games.

ANOVA test was used to measure the amount of computer game usage based on the place of

Table 1. Hours spent on computer games per day

Hours per day	Frequency	Percentage
Less than half an hour	21	5.46
Half an hour to 1 hour	219	84.00
Between 1 to 2 hours	167	43.49
Between 2 to 3 hours	57	14.84
Over 3 hours	55	14.34
Total	384	100

Table 2. Coefficients of the regression equation using computer games with behavior problems

Variable	B	Standard error	β	t	P	R	R^2	R^2_{adj}
Constant rate	52.6	3.975	-	17.10	< 0.001	0.37	0.38	0.25
Rate of using computer games	0.487	0.012	0.362	5.71	< 0.001			

Dependent variable: Behavioral problems

Table 3. Regression coefficients of the computer game with components of behavioral problems

	Subscales of behavioral problems	β	Standard error	t	P	R	R^2	R^2_{adj}
Amount of using computer games	Withdrawn/ depression	0.17	0.010	4.299	< 0.001	0.44	0.45	0.150
	Somatic complaints	0.03	0.025	0.124	0.630	0.02	0.02	0.003
	Depression/ anxiety	0.16	0.021	3.993	< 0.001	0.37	0.38	0.120
	Social problems	0.12	0.011	2.078	0.045	0.15	0.17	0.064
	Thinking problems	0.06	0.032	0.274	0.410	0.04	0.05	0.004
	Attention problems	0.08	0.024	0.478	0.233	0.05	0.05	0.010
	Rule-breaking problems	0.13	0.019	2.410	0.032	0.22	0.24	0.090
	Aggressive behaviors	0.19	0.017	5.250	< 0.001	0.47	0.48	0.170

Table 4. The statistics of ANOVA test for comparing the amount of computer game usage based on the place of living

Variable		Amount of using computer games			F	Significance
		Number	Mean	SD		
Residential areas	Rich	152	24.062	3.613	3.988	0.001
	Semi-rich	103	20.356	2.638		
	Deprived	129	17.579	2.045		

living. The results shown by table 4 indicate that there is a significant difference between the amount of using computer games and the place and area students live ($P < 0.010$); i.e. students living in rich regions of the city spent more time playing the games.

Moreover, ANOVA was used to measure the amount of computer game usage based on maternal job. The results of table 5 showed that there was a significant difference between the amount of computer game usage in students and the employment of their mothers ($P < 0.050$); but this was not significant for their father's job.

Discussion

Computer games are one of the most exciting activities of human beings in the 20th century. These games, which have almost been in the markets since three decades ago, have forced a large number of children and adolescents to spend many hours of the day and night playing with them. Computer games are largely accompanied with emotions such as hostility, anger, and aggression. That is why nowadays reviewing the clinical and psychological effects of these games is considered as the turning point and interest of some psychologists and mental health professionals. Moreover, a combination of three psychological elements (i.e. a feeling of enjoyment, excitement, and dominance) in computer games has doubled its attraction for the players. Parents and mental health professionals are extremely concerned about possible negative effects of these games on children and adolescents.

The results of the present study indicated that approximately 75% of students have computer game devices at home which are part of their entertainments. Doran suggested that 81.8% of the

respondents have computer game devices at home and 89.1% of them are exposed to the non-stop experience of playing the games.²³

The results of a study illustrated that almost half of the students used computer games for over 2 years and for 1 to 2 hours a day. The findings indicated that of the 53.3% of the students who played these games, 42.8% played them over 3 hours a week (31.9 and 53.9% of girls and boys, respectively), and 10.6% of students played them for less than 3 hours.¹⁶ Study results in the U.S. showed that 8 to 10 year olds spent 65 minutes a day on average playing the games, 10 to 14 year olds spent 52 minutes, and 15 to 18 year olds spent 33 minutes a day.²⁴

The correlation between the amount of computer game usage and behavioral problems and its subscales were reviewed. This showed that there was a significant and direct correlation between withdrawn/depression, depression/anxiety, social problems, rule-breaking problems, and aggressive behavior. Some studies indicated that such games not only cause seclusion and social withdrawal in adolescents, but also decrease the amount of altruism, and devalue the cooperation and collaboration-based values among them.^{12,14,25} Moreover, a large number of studies confirmed the correlation between violent computer games and aggressive behavior, aggressive emotions, physiological arousal, and rule-breaking behavior.^{13,26,27} They also emphasized that the lower the age of the player, the stronger the correlation is. In addition, some horror games have caused anxiety disorders and fear symptoms (e.g. nightmare) in children.¹⁵

Other findings of the study showed that the amount computer game usage in students living in rich residential areas is higher and the father's

Table 5. The statistics of ANOVA test for comparing the amount of computer game usage based on maternal job

Variable	Amount of using computer games			F	Significance
	Number	Mean	SD		
Father's job	Unemployed-Labor	43	25.666	1.021	0.383
	Self-employed	117	26.864		
	Governmental	157	24.864		
	Educational	67	24.200		
Mother's job	Housewife	148	16.021	3.103	0.020
	Self-employed	42	26.550		
	Governmental	115	24.864		
	Educational	79	20.040		

job had no effect on it. However, the students whose mothers were self-employed or had a governmental job spent much more time on these games. The adolescents living in rich areas of the city spend more time on computer games. However, studies in other communities show different results concerning the correlation between the socioeconomic status and prevalence of computer games among adolescents.¹⁶ Some of them found that its prevalence is identical in all socioeconomic levels.²⁸ Some others found that there is an inverse correlation between socioeconomic status and prevalence rate of adolescents' involvement in computer games.²⁹ Finally, another group emphasized the positive correlation of these two variables.³⁰ Students whose mothers were employed had higher dependency and addiction on computer games than those with housewife mothers.²¹

Since no related study inside and outside Iran was found during the research, further studies are needed to confirm or reject the hypothesis. Nevertheless, it is also recommended that further studies evaluate the positive effects of such games. Furthermore, it is recommended to conduct this study on various age groups. The limitation of the study was selection of the study samples among male student; as a result of which, the results may not be generalized to girls. Therefore, it is suggested that future studies investigate female students. In addition, it might be much better provided that dependent variables could simultaneously be measured together in a multivariate model.

Conflict of Interest

The Authors have no conflict of interest.

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رابطه بین بازی‌های رایانه‌ای با مشکلات رفتاری نوجوانان

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مقاله پژوهشی

چکیده

مقدمه: بازی‌های رایانه‌ای به عنوان یک پدیده اجتماعی در کنار سایر رسانه‌های صوتی و تصویری و به دلیل رشد چشمگیر فن‌آوری‌های ارتباطی در دنیای امروز، با کشش و جاذبه‌ای حیرت‌انگیز، عمده‌ترین مخاطبان خود را از میان کودکان و نوجوانان انتخاب کرده است. با افزایش سریع محبوبیت این بازی‌ها در بین کودکان و نوجوانان، نگرانی همگانی از تأثیرات زیان‌بار احتمالی این بازی‌ها فزونی گرفته است. از جمله نگرانی‌های عمده در مورد این بازی‌ها، مشکلات رفتاری استفاده‌کنندگان از آن‌ها می‌باشد. در این راستا، پژوهش حاضر به بررسی رابطه بازی‌های رایانه‌ای با مشکلات رفتاری در دانش‌آموزان پسر مقطع راهنمایی پرداخت.

روش‌ها: تحقیق حاضر به روش توصیفی-همبستگی انجام گرفت. نمونه تحقیق شامل ۳۸۴ دانش‌آموز پسر مقطع راهنمایی شهر کرمان بود که با روش نمونه‌گیری تصادفی ساده انتخاب شدند. نمونه‌ها ضمن پاسخ به پرسش‌نامه محقق ساخته بازی‌های رایانه‌ای، پرسش‌نامه مشکلات رفتاری Eschenbach (Youth self-report scale یا YSR) را نیز تکمیل کردند.

یافته‌ها: بین میزان استفاده از بازی‌های رایانه‌ای و اضطراب/افسردگی، گوشه‌گیری/افسردگی، رفتار قانون‌شکنی، رفتار پرخاشگرانه و مشکلات اجتماعی رابطه مستقیم و معنی‌داری در سطح ۹۵ درصد وجود داشت. این در حالی بود، که بین میزان استفاده از این بازی‌ها و شکایات بدنی، مشکلات تفکر و مشکلات توجه رابطه معنی‌داری از لحاظ آماری وجود نداشت. همچنین، بین دانش‌آموزان از لحاظ منطقه محل سکونت و شغل والدین در استفاده از بازی‌های رایانه‌ای تفاوت معنی‌داری به دست آمد.

نتیجه‌گیری: استفاده از بازی‌های رایانه‌ای با اضطراب، افسردگی، گوشه‌گیری، رفتار قانون‌شکنی، رفتار پرخاشگرانه و مشکلات اجتماعی در نوجوانان ارتباط دارد.

واژگان کلیدی: بازی‌های رایانه‌ای، مشکلات رفتاری، نوجوانان

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