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

Solmaz Shokouhi-Moqhaddam MSc1, Noshiravan Khezri-Moghadam PhD2, Zeinab Javanmard MSc3, Hassan Sarmadi-Ansar MSc4, Mehran Aminaee5, Majid Shokouhi-Moqhaddam6, Mahmoud Zivari-Rahman MSc7

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-correlational 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about 95% direct significant correlation between the amount of playing games among adolescents and anxiety/depression, withdrawn/depression, rule-breaking behaviors, aggression, and social problems.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

Citation: Shokouhi Moqhaddam S, Khezri Moghadam N, Javanmard Z, Sarmadi Ansar H, Aminaee M, Shokouhi Moqhaddam M, et al. A Study of the Correlation between Computer Games and Adolescent Behavioral Problems. Addict Health 2013; 5(1-2): 43-50.

Received: 19.07.2012 Accepted: 31.10.2012
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. 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. Such a disorder is characterized by persistent aggressive behavior and violating the rights of others. 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.

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. The prevalence rate of behavioral problems among the school-aged population has been reported to be 0.5% to 20% in different studies. The prevalence rate of behavioral problems among elementary school student is estimated to be 20.4%.

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 hyperactivity disorder 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%.

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.

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.

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.

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. 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.

Studies confirmed the correlation between playing computer games and decreased social participation rate. Furthermore, it has been
identified that some horror games cause anxiety disorders and panic symptoms (e.g. nightmares) in children.\textsuperscript{13} Findings of another study showed that 53.4\% (798 subjects) of high-school students in Zanjan 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.\textsuperscript{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.\textsuperscript{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 the their reaction time was shortened.\textsuperscript{18-20} Moreover, the results indicated a significant and direct correlation between maternal employment and computer game dependency.\textsuperscript{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.\textsuperscript{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 R2adj, 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 living.
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 devaluate 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

| Variable        | Amount of using computer games | F  | Significance |
|-----------------|--------------------------------|----|--------------|
|                 | Number | Mean | SD  |                |                |
| Father’s job    |         |      |     |                |                |
| Unemployed-Labor| 43      | 25.666 | 3.737 | 1.021       | 0.383          |
| Self-employed   | 117     | 26.864 | 3.966 |              |                |
| Governmental    | 157     | 24.864 | 3.234 |              |                |
| Educational     | 67      | 24.200 | 3.044 |              |                |
| Housewife       | 148     | 16.021 | 2.007 |              |                |
| Mother’s job    |         |      |     |                |                |
| Self-employed   | 42      | 26.550 | 4.010 | 3.103       | 0.020          |
| Governmental    | 115     | 24.864 | 3.840 |              |                |
| Educational     | 79      | 20.040 | 2.044 |              |                |
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. Some of them found that its prevalence is identical in all socioeconomic levels. Some others found that there is an inverse correlation between socioeconomic status and prevalence rate of adolescents’ involvement in computer games. Finally, another group emphasized the positive correlation of these two variables. Students whose mothers were employed had higher dependency and addiction on computer games than those with housewife mothers.

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.

**References**

1. Besharat MA, Najafi M. Confirmatory Factorial Structure, reliability and validity of the Achenbach Youth Self-Report Scale (YSR): Monozygotic and Dyzigotic twins. Journal of Clinical Psychology 2009; 1(1): 1-18. [In Persian].

2. Ghobari Bonab B, Parand A, Hossein Khanzadeh Firouzjah AA, Moulali G, Neamati G. Prevalence of behavioral problems among school children of Tehran. Research on Exceptional Children 2009; 9(3): 223-38.

3. Secer Z, Çeliköz N, Koçyigit S, Seçer F, Kaylı G. Social skills and problem behaviour of children with different cognitive styles who attend preschool education. Procedia - Social and Behavioral Sciences 2009; 1(1): 1554-60.

4. Ivanova MY, Dobrean A, Dopfner M, Erol N, Fombonne E, Fonseca AC, et al. Testing the 8-syndrome structure of the child behavior checklist in 30 societies. J Clin Child Adolesc Psychol 2007; 36(3): 405-17.

5. Achenbach TM, Howell CT, Quay HC, Conners CK. National survey of problems and competencies among four- to sixteen-year-olds: parents' reports for normative and clinical samples. Monogr Soc Res Child Dev 1991; 56(3): 1-131.

6. Kauffman JM. Characteristics of Emotional and Behavioral Disorders of Children and Youth. 7th ed. New Jersey, NJ: Prentice Hall; 2001.

7. Moghadam M, Yassami MT, Bina M, Abdolmaleki F, Bagheri Yazdi SA. Epidemiological study of behavioural disorders in the primary school students of ghoreveh and evaluation of the validity and reliability of rutter teacher scale in assessment of behavioural disorders in 2001. Sci J Kurdistan Univ Med Sci 2002; 7(1): 7-12. [In Persian].

8. Kazdin AE. Practitioner review: psychosocial treatments for conduct disorder in children. J Child Psychol Psychiatry 1997; 38(2): 161-78.

9. Ghorbani S, Mohamadzadeh H, Tartibian B. Computer games have become a popular pastime among children and adolescents. Harakat 2007; (34): 199-208. [In Persian].

10. Shariat SV, Asad Elahpour A, Ali Rezaei N, Bashar Danesh Z, Birashk B, Tehrani Doust M, et al. Age rating of computer games from a psychological perspective: a delfi study. Adv Cogn Sci 2009; 11(2): 8-18. [In Persian].

11. Wallenius M, Punamaki RL. Digital game violence and direct aggression in adolescence: A longitudinal study of the roles of sex, age, and parent-child communication. Journal of Applied Developmental Psychology 2008; 29(4): 286-94.

12. Walsh D, Gentile D, Walsh E, Bennett N, Walsh M. Tenth Annual Media Wise Video Game Report Card,"National Institute on Media and the Family [Online]. 2005; Available from: URL: www.mediatfamily.org/research/report_10yr_overview.shtml/

13. Abdolkhaleghi M, Davachi A, Sahbaie F, Mahmoudi M. Surveying the association between computer-video games and aggression in male students of guidance schools in Tehran. Med Sci J Islamic Azad Univ Tehran Med Branch 2003; 15(3): 141-5. [In Persian].

http://ahj.kmu.ac.ir, 4 April
14. Ahmadi S. Effects of Computer games among children and adolescents [MSc Thesis]. Isfahan, Iran: University of Isfahan; 2003. p. 23. [In Persian].

15. Van den Bulck J. Media use and dreaming: the relationship among television viewing, computer game play, and nightmares or pleasant dreams. Dreaming 2004; 14(1): 43-9.

16. Amini K, Amini A, Pharm D, Yaghobi M, Amini D. High School Students Playing Computer Games. Developmental Psychology 2007; 4(14): 189-98. [In Persian].

17. Shaverdi T, Shaverdi SH. Children, adult and mothers’ view about the social impacts of computer games. Iranian Journal of Cultural Research 2009; 2(3): 47-76. [In Persian].

18. Berger A, Jones L, Rothbart MK, Posner MI. Computerized games to study the development of attention in childhood. Behav Res Methods Instrum Comput 2000; 32(2): 297-303.

19. Wood RL, Fussey I. Computer-based cognitive retraining: a controlled study. Int Disabil Stud 1987; 9(4): 149-53.

20. Najafi M, Mohamadi M, Asari S. Impact of computer game and computer assisted type instruction on inattention and impulsivity of children suffering from attention deficit hyperactivity disorder. J Shahrekord Univ Med Sci 2005; 7(3): 47-54. [In Persian].

21. Abedini Y, Zamani BE, Kheradmand A, Rajabizadeh G. Impacts of Mothers’ Occupation Status and Parenting Styles on Levels of Self-Control, Addiction to Computer Games, and Educational Progress of Adolescents. Addict Health 2012; 4(3-4): 102-10. [In Persian].

22. Kakaberaie K, Habibi Asgar-Abad M, Fedaei Z. Validation of Achenbach's Behavioral Problems: Performing the Youth Self-Report Scale (YSR) for 11-18 Year-old Adolescents on High School Students. Research Psychological Health 2008; 1(4): 50-66. [In Persian].

23. Doran B, Azad Falah P, Ejei J. The relationship between computer games and social skills of adolescents. Journal of Psychology 2002; 6(1): 4-17. [In Persian].

24. Roberts DF, Foernt UG, Rideout V. Generation Media in the lives of 8-18 year olds [Online]. 2005; Available from: URL: http://www.kff.org/entmedia/upload/8010.pdf/

25. Manteghi M. Consequences of video games and computer. Tehran, Iran: Farhang-Denesh; 2001. [In Persian].

26. Anderson CA, Bushman BJ. Effects of violent video games on aggressive behavior, aggressive cognition, aggressive affect, physiological arousal, and prosocial behavior: a meta-analytic review of the scientific literature. Psychol Sci 2001; 12(5): 353-9.

27. Winsler A, Wallace G. Behavior Problems and Social Skills in Preschool Children: Parent-Teacher Agreement and Relations with Classroom Observations. Early Education and Development 2002; 13(1): 41-58.

28. World Health Organization. Sedentary behavior among Scottish youth: Prevalence and determinants [Online]. 2007; Available from: URL: http://www.euro.who.int/__data/assets/pdf_file/0003/163857/Social-determinants-of-health-and-well-being-among-young-people.pdf/

29. Shi Z, Lien N, Kumar BN, Holmboe-Ottesen G. Physical activity and associated socio-demographic factors among school adolescents in Jiangsu Province, China. Prev Med 2006; 43(3): 218-21.

30. Li M, Dibley MJ, Sibbritt DW, Zhou X, Yan H. Physical Activity and Sedentary Behavior in Adolescents in XiGÇÖan City, China. Journal of Adolescent Health 2007; 41(1): 99-101.
رابطه بین بازی‌های رایانه‌ای با مشکلات رفتاری نوجوانان

سلامار شکوهی مقدم، ی.دکتر نوشیروان خضروی مقدم، 2.زینب جوانمرد، 3.حسین سرمشی انصار، 4.مهران امینی‌پور، 5.مجید شکوهی مقدم، 6.محمود زیوری رحمان، 7.محمودرهامی یاری

مقاله پژوهشی

چکیده

مقدمه: بازی‌های رایانه‌ای به عنوان یک پدیده اجتماعی در کنار سایر رسانه‌های صوتی و تصویری و به دلیل رشد چشمه‌گیرنده از محبوبیت دیده‌شده یکی از راه‌های ارتقاء و رفتن در ذهن و جاده‌های حیرت‌انگیز ساده‌ترین مطالعه کودکان و نوجوانان انتخاب کرده است. با افزایش سریع محبوبیت این بازی‌ها در کودکان و نوجوانان، نکته‌ای همگامی از تأثیرات ظریف این بازی‌ها فوزی گرفته است. ازجمله نگاردهای عمده در مورد این بازی‌ها، مشکلات رفتاری استفاده کننده‌اند که از ها می‌باشد. در این راستا، پژوهش حاضر به بررسی رابطه بازی‌های رایانه‌ای با مشکلات رفتاری در مدارس اوران پس مقطع راهنمایی پرداخت.

روش‌ها: برای حساسیت به روش توصیفی- هیپوئژیکال (گرفت. مقدمه تحقیق شامل ۲۸۶ دانش‌آموز مرغوب مقطع راهنمایی شهر اوران بود که با روش نمونه‌گیری تصادفی ساده انتخاب شدند. نمونه‌ها ضمن پاسخ به پرسشنامه محقق ساخته بازی‌های رایانه‌ای یا شناسه‌نامه مشکلات رفتاری (YSR Youth self-report scale) Eschenbach

یافته‌ها: در میزان استفاده از بازی‌های رایانه‌ای و اضطراب‌افسردگی؛ گوش‌گیری/ افسردگی، رفتار قانونی شکنی، رفتار برخورداری و مشکلات اجتماعی رابطه مستقیم و معنی‌داری از سطح 95 درصد وجود داشته است. این در حالی بود که در میزان استفاده از این بازی‌ها و شکایات بدني، مشکلات تفکر و مشکلات نوع 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 با دست آمده.

نتیجه‌گیری: استفاده از بازی‌های رایانه‌ای با اضطراب‌افسردگی، گوش‌گیری، رفتار قانونی شکنی، رفتار برخورداری و مشکلات اجتماعی در نوجوانان ارتباط دارد.

واژگان کلیدی: بازی‌های رایانه‌ای، مشکلات رفتاری، نوجوانان

ارجاع: شکوهی مقدم سلامار، خضروی مقدم نوشیروان، جوانمرد زینب، سرمشی انصار حسن، امینی‌پور مهران، شکوهی مقدم میجید، زیوری رحمان محمدرضا، راهبردی

تاریخ دریافت: 91/4/30

نویسندگان: شکوهی مقدم سلامار

Email: zivari63@yahoo.com

http://ahj.kmu.ac.ir, 4 April