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Research Paper: The Effect of Family Education on Digital Games Addiction

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Abstract

Harmful use of digital technologies is increasing among different age groups, especially children, in society. Therefore, it is essential to focus on this issue and educate families to empower them to deal with it properly. The present study aimed to investigate the effect of family education on digital game addiction. The study employed a quasi-experimental method with a pretest-posttest design and a control group. The statistical population of this study included male students of the fourth and fifth grades of the Farid School in Ramsar city, Iran, in the academic year of 2019-2020. The purposive sampling method selected 40 students, considering the sample attrition. Afterward, they were randomly and equally assigned to the experimental and control groups. Initially, the Videogame Addiction Scale for Children (VASC) was performed on both groups in the pre-test stage. Then, the experimental group completed a family education course. At the end of the training period, both groups performed the post-test again. The data were analyzed using covariance analysis and SPSS software version 24. The results showed that the mean of digital game addiction and its components in the experimental group decreased significantly compared to the control group ($p < 0.05$). Based on the findings obtained, it can be concluded that family education effectively reduces addiction to digital games. Therefore, designing and implementing training courses for families can help reduce their children's harmful use of new electronic technologies.

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1. Introduction

The psychological, social, and biological phenomenon called game has existed throughout history to fill leisure time and enjoy life, especially for children and adolescents. Games have been an integral part of people's lives.

Over time, traditional games were gradually marginalized, and the possibility of playing these games was reduced. This reduction was due to the new technological development and lifestyle changes, urbanization expansion, and mass media use. Consequently, the world was ready for the arrival of digital games (Cai et al., 2022).

Statistics showed that approximately 97% of children aged 6 months to 4 years used digital devices. In addition, about three-quarters of these children have mobile phones (Kabali, Irigoyen, Nunez-Davis, Budacki, Mohanty& et al., 2015).

Another study in the United States found that children ages 8 to 10 used digital devices for eight hours a day. Additionally, older children spend more than 11 hours daily using digital devices (Rideout, Foehr & Roberts., 2010). In addition, Fang and Bushman (2013) indicated that 59% of the fourth-grade girls and 73% of the fourth-grade boys preferred digital games to sports and strategy games.

The prevalence of Internet addiction in Iran is increasing (Seyedi Asl et al., 2013). For example, about eight million and seven hundred thousand people used digital games, including 31% of children and 69% of other groups. Furthermore, 13% of these people used console games, 91% used mobile games, and 22% used computer games. Besides, out of every thousand children in Iran, 69 people were gamers. Furthermore, Iranian child gamers averagely play 83 minutes daily (Nasiri,2019).

Regarding the importance of digital games, it should be noted that the asset turnover of digital games has gradually surpassed. Even Hollywood cinema and digital games affect all types of interactive media, from television to movies, mobile phones, and the Internet. They even change the lives of those who do not play (Balstrov, 2006).

In addition, Balstrov (2006) stated that "the information age is becoming the age of gaming, right under our noses." Moreover, digital games are one of the most important media that influence the socialization of children and adolescents in the present age (Miera, 2006; Santos et al., 2021).

Digital games also have positive effects. Training and increasing the speed and ability of management are the opportunities provided by digital games that can lead to positive outcomes for gamers (Chan et al., 2022; Jankiraman et al., 2021). Besides, these games activate children's creativity and gradually increase children's finger movement skills as a result of playing games with a keyboard (Ashwini et al., 2021).

On the other hand, in classic video games, the individual usually played the game alone, which is not accurate for current online games. Griffiths (2015) acknowledged that new online games allow players to interact due to the differences between online games and classic video games.

The positive effects of digital games include learning, rehabilitation, and business. However, they have adverse consequences such as aggression, social

isolation, a departure from the norm, and addiction (Addo et al., 2021).

According to the Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), addiction or substance use disorder includes criteria such as poor impulse control, social disorder, risk-taking use, and drug tolerance (American Psychiatric Association, 2013). Therefore, addiction to digital games is often referred to as excessive and unhealthy digital gaming. Furthermore, in this type of addiction, the player spends most of his daily time playing games (Seyed Hosseini, 2016).

In addition, Internet gaming disorder is a form of emotional attachment to digital gaming. This disorder was not a formal diagnostic criterion until the release of the DSM-5 in 2013.

The inclusion of Internet Game Disorder in the third part of the DSM-5 indicated the provision of a common language for researchers and clinicians interested in further research and studies in this field. It helped to make better decisions about the possible placement of this disorder in later editions of the DSM.

Although online gaming addiction includes online games but not other digital games played offline, familiarity with its diagnostic criteria can be useful in understanding more about digital gaming addiction. Generally, research in the field of digital game addiction has increased significantly since 2005. Moreover, the impact of family on digital game addiction in children has been one of the important cases studied in this field (Gonzalez-Buesu et al., 2018; Torres-Rodriguez, Griffiths and Carbonell, 2018; Schneider, 2017).

Besides, research on Internet addiction and digital games has shown that adolescents addicted to the Internet were less satisfied with their families than non-addicts. More conflicts happened between their parents, and they felt their parents did not care about them (Lee and Wu, 2007).

For example, Hong et al. (2007) found that people with Internet addiction had a worse family environment than non-Internet addicts. These addicts felt that their parents showed less love for them and perceived less satisfaction from the family.

Additionally, it was found that a father's weak attachment to a child was associated with children's Internet addiction (Lee and Wu, 2007). Moreover, other studies found that the family functioning of adults with Internet addiction was impaired. Family functioning included behavioral control, problem-solving, relationships, and roles (Mansey, 2014).

In addition, a lack of strong parental support could lead to feelings of inadequacy and worthlessness. Therefore, people used digital games as a way to escape from reality. Furthermore, digital games could lead to family disputes over time (Brun, 2005).

On the one hand, in our society, many parents live in complex social and economic conditions. Yet, they have to maintain their standard of living in their critical period of life. Such a situation causes stress and tension, which overshadows their lives.

On the other hand, parents do not have much time and energy to communicate with their children. Moreover, they cannot prevent problems like digital game addiction by filling their free time.

However, family education, one of the dimensions considered by social planners, can play a vital role in preventing or reducing the severity of addictions' harmful effects on the family members. Besides, studies on Internet addiction and digital games found that family education and using different family therapy approaches effectively reduced children's Internet addiction (Nelson et al., 2021; Ghaffari and Ahmadi, 2007; Namdari et al., 2012).

Based on the above mentioned, the present study sought to answer the question: What effect does family education have on reducing the digital games addiction of the fourth- and fifth-grade elementary school students in Ramsar city?

2. Method

The present study had an applied purpose. It employed a quasi-experimental methodology with a pre-test and post-test design and a control group. The statistical population of this research included the fourth- and fifth-grade male students of the Farid School in Ramsar city, Iran, in the academic year of 2019-2020.

It is stated that the sample size in experimental research should be at least 15 people (Delavar, 2015). Moreover, according to the background research (Gonzalez-Bueso et al., 2018; Torres-Rodriguez et al., 2018; Vasiliu Vasile, 2017; Amini, 2015; Namdari et al., 2012; Zamani and Abedini, 2013), and taking into account the sample attrition by selective sampling method, 40 students were selected. They all obtained a cut-point above 90 in the pre-test and were randomly divided into two experimental groups (20 people) and a control group (20 people).

2.1. Instrument

Videogame Addiction Scale for Children (VASC)

Videogame Addiction Scale for Children was developed by Yilmatz, Griffiths, and Ken (2017). This scale consists of 21 items and four factors. The factors include self-control (articles 14, 18, 20, 25, 26, 27, and 30), reward / reinforcement (articles 3, 8, 13, 15, 18, and 29), problems (articles 2, 5, 9, and 10), and involvement (articles 16, 22, 23, and 28).

Furthermore, all items in the five-point Likert scale (1 = never, 5 = often) are answered by children. The overall scale score ranges from 21 to 105. According to Yilmaz et al. (2017), a score above 90 indicates a possible addiction to video games. However, this scale is not considered a diagnostic tool and only indicates that the child may be addicted to video games.

Yilmatz et al. (2017) study on girls and boys aged 9 to 12 confirmed this scale's factor structure. Moreover, Cronbach's alpha internal consistency for the scale's total score was 0.89. Besides, it was 0.84 for subscales including self-control, 0.83 for reward / reinforcement, 0.75 for problems, and 0.73 for involvement.

It is worth mentioning that this scale has not been used before in domestic research in Iran. Additionally, the internal consistency of the scale was 0.84 in the present study.

Family Education Protocol

In the present study, the family education protocol was based on previous studies in the field of individual and family therapies for digital game addiction (Gonzalez-Bueso et al., 2018; Torres-Rodriguez et al., 2018; Vasiliu Vasile, 2017; Lemos, Abreu &

Sougey 2014; Han, Kim, Lee, & Renshaw, 2012; Young, 2010). Behavior modification techniques (Miltenberger, 2015) were also considered for developing this protocol by relying on various teaching methods such as lectures, group discussions, educational booklets, videos, photos, homework, and acting.

In addition, the Family education courses were performed in 10 sessions, each one 2 hours, on the children in the experimental group and their parents. Table 1 provides an overview of the content of family education sessions.

Table 1

Overview of the content of family education course sessions

Number of the session	Content of sessions
1	Familiarize members and therapists with each other and review research objectives and training framework
2	Provide education to parents about the symptoms, types, causes, and treatment of drug addiction, behavioral and non-drug-related habits, and digital and online game addiction
3	Teaching the family dynamics and the roles and responsibilities of members
4	Teaching behavior modification techniques to parents
5	Teaching stress management skills to parents and children
6	Teaching relaxation techniques to parents and children
7	Teach parents how to change their attention and plan daily activities
8	Cognitive reconstruction of parents with the presence of a support group
9	Teaching self-monitoring to parents and children
10	Teach parents and children to recognize and regulate emotions

3. Results

The present study sample included 40 male students in the fourth and fifth grades of elementary school. The mean and standard deviation of students' age were 10.45 and 0.75 in the experimental group and 10.31 and 1.03 in the control group, respectively.

Moreover, the results of chi-squared test showed that the two groups in terms of fathers' education (P-value = 0.818, X^2 = 0.402) and mothers' education (P-value = 0.264, X^2= 2.667) were not significantly different. Furthermore, no significant difference was observed regarding fathers' occupation (P-value = 0.205, X^2 =3.167) and mothers' occupation (P-value = 0.344, X^2 = 2.133) in the two groups. The mean and standard deviation of digital game addiction and its components are also presented in Table 2.

Table 2

Mean and standard deviation of the variable of digital game addiction and its components

Variable	Experiment		Control	
	Pre-test	Post-test	Pre-test	Post-test
Self-control	1.118±31.23	1.277±26.50	1.395±32.50	1.182±32.87
Reward / reinforcement	1.333±26.25	1.496±21.65	1.276±25.57	1.164±26.41
Problems	1.142±17.63	1.761±15.45	1.508±18.27	0.834±18.49
Involvement	1.209±17.72	1.146±14.55	1.231±18.24	1.070±18.86
Digital game addiction	1.461±92.85	3.066±78.15	2.852±93.17	2.540±94.35

As Table 2 shows, the mean of digital game addiction and its components in the experimental group decreased in the post-test compared to the pre-test. However, the opposite was true for the control group y

Moreover, there was a significant difference between the mean scores of digital game addiction in the two groups of control and experimental in the pre-test stage ($p < 0.05$). Therefore, pre-test scores were analyzed as a control variable. The results of the covariance analysis of digital game addiction and its components are also presented in Table 3.

Table 3

The covariance analysis to compare digital game addiction and its components between the two groups

Component	MS	DF	F	Sig	Effect size	Power
Self-control	72.910	1	47.793	0.00	0.585	1
Reward / reinforcement	108.717	1	57.357	0.00	0.628	1
Problems	11.295	1	5.843	0.02	0.147	0.651
Involvement	39.509	1	32.673	0.00	0.490	1
The total score of digital game addiction	846.019	1	112.815	0.00	0.753	1

As Table 3 demonstrates, the probability value of the test for the components of self-control ($p<0.001$), reward/reinforcement ($p<0.001$), problems ($p<0.05$), involvement ($p<0.001$), and the total score of digital game addiction ($p<0.001$) was significant. Therefore, family education reduced digital game addiction in the experimental group compared to the control group.

Additionally, according to the effect size, it was found that 58%, 62%, 14%, 49%, and 75% of the difference in scores between the components of self-control, reward/reinforcement, problems, involvement, and the total score of digital game addiction, respectively, was affected by family education.

4. Discussion

The current study aimed to investigate the effect of family education on digital game addiction. The findings showed that family education decreased digital game addiction in the experimental group compared to the control group.

This finding was consistent with the findings of other studies that examined family-based treatment strategies for children's digital game addiction (Gonzalez-Bueso et al., 2018; Torres-

Rodriguez et al., 2018; Vasiliu Vasile, 2017; Lemos Et al., 2014; Han et al., 2012; Young, 2010). For example, Gonzalez-Buesu et al. (2018) found that cognitive-behavioral therapy based on family psychological education effectively reduced adolescent online gaming addiction.

Moreover, Torres-Rodriguez et al. (2018), in a study of adolescents aged 12 to 18, found that family-based therapy combined with individual interventions reduced the symptoms of online gaming addiction and increased adolescent well-being .Vasiliu Vasile (2017) also found that ten weeks of cognitive-behavioral therapy reduced the time spent playing online games by 50%, sustained during the 20-week follow-up period.

When people are affected by a psychological disorder, family members may sometimes not know how to help them. As a result, they may behave in a way that preserves or even worsen various aspects of the disease. According to the findings, it can be said that family education creates a better environment at home, thus, solving family problems and understanding the unique problems that a family may face (Varghese et al., 2020).

In the present study, some treatment sessions focused on informing parents about the symptoms, types, causes, and treatment of behavioral habits. For instance, the sessions included digital and Internet game addiction and their disadvantages and advantages, behavior modification techniques, homework, and family members' roles.

Consequently, parents could gain a deeper insight into the behavioral habits of their children. As a result, they could better adjust the hours their children spent playing digital games and doing other tasks and roles.

Increasing family members' relationships was another consequence that helped improve the quality of their relationships and thus reduced tensions between them. Children will perform better, and their level of healthy behaviors will be enhanced in an intimate atmosphere.

Accordingly, Kerat (1998), in a 2-year long-term study on Internet users, found that the increasing use of the Internet was associated with reduced family relationships and participation in social circles. In addition, their participants experienced social isolation and depression due to Internet use.

Furthermore, students participating in the family education course could have better mindfulness, realism, and flexibility. That’s because they learned stress management skills, relaxation techniques, changing attention methods, daily planning activities, and avoiding excessive use of digital games. Self-monitoring training, emotion recognition, and regulation also reduced online games' compensatory use in moderating negative emotions.

Besides, this study was associated with some limitations. The lack of a follow-up period led to restrictions on recording changes over time after the training course. Moreover, only male students participated in this study. Other limitations of the present study were the difficulty of coordinating the training sessions with parents and their children and the cooperation of school officials.

Children's use of digital games has increased, and the time parents spend with their children has decreased due to

economic problems and insufficient cultural training .Therefore, it is suggested that family education be considered one of the main areas of attention in educating children.

5. Conclusion

Family education courses can give parents more control over the quality and quantity of their children's digital games. In addition, it can help parents in preventing their children from playing unhealthy games.

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Conflict of Interest

The Authors declare that there is no conflict of interest with any organization. Moreover, this research did not receive any specific grant from the public, commercial, or not-for-profit funding agencies.

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