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To cite this article:

Eker, H., & Taş, İ. (2022). The relationship between game addiction, emotional autonomy and emotion regulation in adolescents: A multiple mediation model. *International Journal of Technology in Education and Science (IJTES)*, 6(4), 569-584. <https://doi.org/10.46328/ijtes.390>

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The Relationship between Game Addiction, Emotional Autonomy and Emotion Regulation in Adolescents: A Multiple Mediation Model

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Article Info

Article History

Received:

25 March 2022

Accepted:

29 August 2022

Keywords

Game addiction

Emotional autonomy

Internal dysfunctional
emotion regulation

External dysfunctional
emotion regulation

Abstract

This study researches the mediating role of emotion regulation in the relationship between emotional autonomy and game addiction. The sample of the study consists of 335 adolescents. Ages of the sample are between 14 and 18, and the mean age is 15.78. 135 (40.3%) of the participants are 9th graders, 96 (28.7%) are 10th graders, 62 (18.5%) are 11th graders, and 42 (12.5%) are 12th graders. Weekly aimless internet usage time of the adolescents were found to vary between 1 and 80, with a mean of 22 hours. Game Addiction Scale, Emotional Autonomy Scale and Emotion Regulation Scale were used as data collection tools. SPSS 25 package program and PROCESS Macro program, which works as an add-on to it, were used in data analysis. According to the results of the study, emotional autonomy significantly predicts dysfunctional internal and external emotion regulation sub-dimensions and game addiction in a positive way. Dysfunctional emotion regulation predicts game addiction significantly in a positive way. The relationship between emotional autonomy and game addiction is mediated by dysfunctional internal emotion regulation and dysfunctional external emotion regulation. As a result, it was found that the relationship between emotional autonomy and game addiction occurred through dysfunctional emotion regulation.

Introduction

Online games, with their unlimited, interactive and anonymous features, are popular entertainment tools, as well as being important recreational activities (Liu & Chang, 2016). Games that can be played with various technological devices entertain students, but they also cause problems in students' participation in learning processes and focusing on lessons (Kaysi et al., 2021). The fact that adolescents find it easier to interact with others in digital gaming world than face-to-face interaction, they cope with problems in real life thanks to interactions in gaming world, they gain the respect of other players due to their good gaming skills and thus they meet the need to realize themselves makes games attractive for adolescents (Li & Wang, 2013). Excessive gaming as a result of the lure of virtual world brings along the risk of addiction (Dursun & Eraslan-Çapan, 2018).

Online gaming disorder was first recognized as a mental health problem by the American Psychiatric Association (APA, 2013) (included in Chapter 3) and later by World Health Organization (WHO, 2018). The diagnostic criteria of gaming addiction, which is an important risk factor in terms of public health, were listed in nine

categories in DSM 5 (APA, 2013). These criteria are preoccupation with gaming; feeling irritability, anxiety and sadness when gaming is not possible (withdrawal symptoms); spending more time to gaming (tolerance); unsuccessful attempts to control gaming; loss of interest in previous hobbies and fun; continuing excessive use of games; lying to family members, therapists and other people about the time spent for gaming; gaming to avoid or relieve negative feelings (hopelessness, guilt and anxiety); risking or losing relationship, work or career opportunities due to gaming within a period of 12 months. World Health Organization (WHO, 2018) has identified three main symptoms for gaming disorder. These are loss of control over the game at least for a period of 12 months (beginning, frequency, intensity, duration of the game, ending and the context in which the game is played), increased priority of the game over other areas of life and daily activities and continuing to play the game although it causes impairments in personal, family, educational, professional or other important areas.

It can be seen that gaming addiction is positively correlated with trait anxiety (Mehroof & Griffiths, 2010), shyness (Ayas, 2012), attention deficit hyperactivity disorder, obsessive compulsive disorder, depression and anxiety (Andreassen et al., 2016), alexithymia (Yavuz et al., 2019), bullying cognitions (Kılıç, 2019) and social anxiety (Başdaş & Özbey, 2020; Taş & Güneş, 2019); while it is negatively correlated with emotion regulation and school engagement (Liu et al, 2017), need for autonomy and relationship (Dursun & Eraslan-Çapan, 2018) and social support (Ücan, 2018). It can be seen that game addiction is positively correlated with mental health problems. Since game addiction started to be considered as a mental health problem by both APA (2013) and WHO (2018), it is important to research game addiction and the variables it is correlated with. In this context, the present study examines the correlation between emotional autonomy and dysfunctional emotion regulation and game addiction.

Emotional Autonomy and Game Addiction

Adolescence is a period when both positive and negative developmental changes begin to be shaped (Sandhu & Kaur, 2012). In addition to physical and cognitive changes, increased social interaction and new responsibilities acquired in adolescence, significant development also occurs in the field of autonomy (Deniz, Çok & Duyan, 2013). In this period, adolescents start challenging their parents' belief system and they also try to gain autonomy with the increasing effects of peer group. Emotional autonomy development is a paradoxical process including establishing an autonomous ego functioning while maintaining family relationships (Sandhu & Kaur, 2012). According to Ryan and Lynch (1989), emotional autonomy refers to not only liberation from childhood bonds, but also to a general reluctance to trust parents and adolescent's separation from parents. When autonomy takes place as a process of rupture, it creates negative effects on mental health (Sandhu & Kaur, 2012). In this context, it can be said that one of the concepts correlated with problematic behaviors in adolescence is emotional autonomy (Lamborn & Steinberg, 1993). Beyers and Goosens (1999) stated that emotional autonomy process may be stressful especially for adolescents in the middle of the transition period.

Emotional autonomy is considered as a method of coping in an unhealthy family environment (Fuhrman & Holmbeck, 1995) and as a harmful situation in a healthy environment, but generally as an unhealthy separation from parents (Ryan & Lynch 1989; Sandhu & Kaur, 2012). It can be seen that just like emotional autonomy, game addiction is also correlated with unhealthy family environment, negative family relationships (Chiu et al., 2004)

and discouraging family environment (Karacaoğlu, 2019) are effective in the development of game addiction and family environment is a serious risk factor in the development of game addiction (Hyun et al., 2015).

Online games have become an attraction since they emphasize individuality and provide a sense of achievement (Yücel, 2019). On the other hand, individualization and liberation from parents are the two important sub-dimensions of emotional autonomy (Steinberg & Silverberg, 1986) and it can be seen that family commitment decreases as emotional autonomy increases (Parra et al., 2015). With this aspect, games can be a place for representation and a safe haven for adolescents who are separated unhealthily from their parents and who cannot experience positive emotions such as accomplishment in their family environment.

Online gaming addiction is considered as a conduct problem (Kuss, 2013). When studies in literature are examined, it can be seen that emotional autonomy is positively correlated with general conduct problems (Ahmad et al., 2018), while game addiction is positively correlated with risky behaviors (Kaya et al., 2019). Both emotional autonomy and digital game addiction have been found to be negatively correlated with satisfaction with life (Parra et al., 2015). In addition, while game addiction is negatively correlated with school commitment (Liu et al., 2017), emotional autonomy and school achievement have also been found to be negatively correlated (McBride-Chang & Chang, 1998). When the concepts both variables are correlated with are considered, it can be said that a decrease in emotional autonomy will be effective in decreasing digital game addiction.

Emotion Regulation

One of the concepts that may help in coping with negative situations such as game addiction and autonomy is emotion regulation because this concept is closely associated with structures such as coping with stress and emotional regulation (Koole, 2009). The thought that emotions may be most of the time useful and sometimes harmful leads individuals to emotion regulation, which is a process that helps to reduce the impact of emotions, to maintain their emotions or to increase their existing emotions (Werner & Gross, 2010).

Emotion regulation consists of effective attempts individuals make to manage their emotional states. In its broadest sense, emotion regulation includes the regulation of all emotionally charged states including moods, stress and positive or negative effects (Rottenberg & Gross, 2003; Koole, 2009). During emotion regulation, individuals may increase or decrease positive and negative emotions (Gross, 1999). Thus, most of the time emotion regulation includes changes in emotional reactions (Koole, 2009).

Problems in emotion regulation play a central role in development and maintenance of psychiatric disorders and maladaptive behaviors (Kring & Sloan, 2010). One of the criteria of online game addiction which started to be seen as a mental health problem is continuing to play to get rid of negative emotions (APA, 2013). This criterion means that individuals who are addicted to game experience problems in emotion regulation. In a study conducted by Taş and Güneş (2019), it was found that individuals with high computer game addiction also had high levels of alexithymia, which is the problem of describing, expressing and regulating emotions. In a study conducted by Barut (2019), correlation was found between emotion regulation and digital game addiction. Similarly, in a study

by Ercengiz and Şar (2017), correlation was found between internet addiction and emotion regulation. Thus, it can be said that emotion regulation and digital game addiction are correlated and insufficient emotion regulation is effective in the formation of digital game addiction in adolescents.

The fact that online gaming disorder is included in DSM 5 Part 3 means that there is a need for more research on this problem. Children and adolescents are more influenced by game addiction since they are in development period. Therefore, it is important to research game addiction and the related concepts in adolescents. Emotional autonomy and emotion regulation are important concepts in terms of interpersonal relationships in adolescence when independence is experienced, emotions fluctuate and seem contradictory.

The aim of this study is to research the correlation between game addiction in adolescents and emotional autonomy and emotion regulation. Emotional autonomy may result in loss of connections with family, which can lead to lack of integrated identity, low self-esteem and problematic behaviors in adolescents (Lamborn & Steinberg, 1993; Ryan & Lynch, 1989). Similarly, it can be seen that the problems in emotion regulation play a key role in maladaptive behaviors and psychiatric problems (Kring & Sloan, 2010). It can be said that emotion regulation will be effective in the process of being separated from the family and adolescents who cannot regulate emotions will tend to problematic behaviors such as game addiction. In line with the purpose of the study, the following hypotheses were tested:

1. Emotional autonomy predicts game addiction.
2. Emotional autonomy predicts emotion regulation.
3. Emotion regulation predicts game addiction.
4. Emotion regulation mediates the relationship between emotional autonomy and game addiction.

In line with the aforementioned hypotheses, the proposed model is shown in Figure 1.

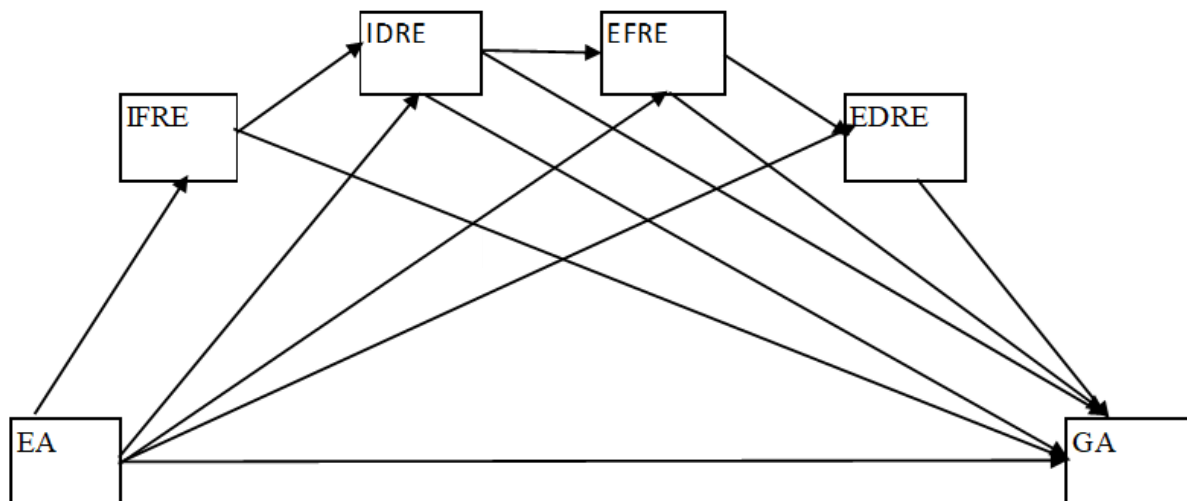


Figure 1. The Model Explaining Game Addiction

GA: Game addiction; EA: Emotional autonomy; IFRE: Internal functional emotion regulation; IDRE: Internal dysfunctional emotion regulation; EFRE: External functional emotion regulation; EDRE: External dysfunctional emotion regulation

Method

Study Model

Correlational survey model was used in the study. The relationship between the variables was tested with multiple mediation model. Mediation analysis is a statistical model that is used to evaluate the evidence obtained from studies designed to test the hypotheses about how the casual antecedent variable X transmits its effect on a consequent variable Y (Hayes, 2018).

Study Group

The study group consists of 335 adolescents. 147 (43.9%) of the participants are male, while 188 (56.1%) are female. The ages of participants vary between 14 and 18 and mean age is 15.78. 135 (40.3%) of the patients are 9th graders, 96 (28.7%) are 10th graders, 62 (18.5%) are 11th graders and 42 (12.5%) are 12th graders. Weekly internet usage time of the participants is between 1-80 hours and mean time is 22 hours. All of the participants filled in informed consent forms and agreed to participate in the study.

Data Collection Instruments

Game Addiction Scale

The scale was developed by Anlı and Taş (2018). The scale, which is a 5-point Likert type, consists of 9 items and a single factor. As a result of the exploratory factor analysis, KMO (Kaiser-Meyer-Olkin) value was found as .894, and Barlett's Sphericity value was found as $\chi^2 = 2283,226$, $p = .000$. The single factor structure explains 42.806% of the total variance. Fit indices obtained as a result of confirmatory factor analysis show that the scale is a valid measurement instrument ($\chi^2(27) = 2.514$, $RMR = .045$; $GFI = .97$; $AGFI = .95$; $CFI = .96$; $IFI = .96$; $RFI = .92$; $NFI = .94$; $RMSEA = .054$). Reliability analysis was measured with Cronbach Alpha internal consistency coefficient and found as .81. Cronbach Alpha internal consistency coefficient of the present study was found as .87.

Emotional Autonomy Scale

The scale was developed by Steinberg and Silverberg (1986) and adapted into Turkish culture by Tatar et al., (2016). The scale, which is a 4-point Likert type, consists of 20 items and 4 factors. Construct validity was tested with exploratory factor analysis. 4 factor structure explains 48.3% of the total variance. Fit indices obtained as a result of confirmatory factor analysis are within acceptable limits ($\chi^2(270) = 2672$, $sd = 270$; $RMR = .079$ $GFI = .81$; $RMSEA = .09$). Reliability analysis was measured with Cronbach Alpha internal consistency coefficient and found as .79. Cronbach Alpha internal consistency coefficient of the present study was found as .78.

Emotion Regulation Scale

The scale was developed by Phillips and Power (2007) and adapted into Turkish culture by Duy and Yıldız (2014). The scale, which is a 5-point Likert type, consists of 18 items and 4 factors. As a result of the exploratory factor

analysis, KMO (Kaiser-Meyer-Olkin) value was found as .79, and Barlett's Sphericity value was found as $\chi^2 = 3620.323$, $sd = 153$, $p < .000$. 4 factor structure explains 51.48% of the total variance. Fit indices obtained as a result of confirmatory factor analysis are within acceptable limits ($\chi^2 = 517.94$, $sd = 129$, $\chi^2 / df = 4.01$, $p = 0.00$; RMSEA = .06, RMR = .09, SRMR = .06, GFI = .94, AGFI = .92, CFI = .93, NFI = .91 and NNFI = .92). For the present study, Cronbach Alpha internal consistency coefficient was found as .68 for external dysfunctional factor, as .67 for internal dysfunctional factor, as .72 for internal functional factor and as .60 for external functional factor.

Data Collection and Analysis

The study was approved by the ethics committee of the institution the second author of the study was working at (28.01.2021 dated and 2021/01 numbered ethics committee decision). Before the data were collected, informed consent was taken from the participants. 350 data were collected from the participants and 15 were excluded from data analysis set since they had missing data. Data analysis was conducted on 335 data. SPSS PROCESS Macro program was used in data analysis. The effect of mediating variables was tested with PROCESS model 6 formed by Hayes (2012). This program uses non-parametric Bootstrap method and conducts the analysis through 95% confidence interval on a sample of 5000 individuals with resampling method.

The effect of independent variable on dependent variable was calculated with direct effect, indirect effect and total effect scores. The impact of mediating variable was measured with Bootstrap confidence interval. The upper limit of confidence interval (BootLLCI-BootULCI) being lower than zero or higher than zero and the fact that there is no "0" between the two variables shows that the mediating variable mediates. As a result of the analysis, insignificant correlation between the dependent variable and independent variable means full mediation, and a decrease in the correlation even if it is significant means partial mediation. The fact that Bootstrap method reduces the Type II error which means accepting a false hypothesis as true makes the method strong (Preacher & Hayes, 2008).

Results

Sociodemographic variables of the study group and the analyses of these variables are shown in Table 1. According to Table 1, game addiction ($t_{(333)} = 5.87$, $p < .05$) differs by gender. Game addiction mean of boys ($X = 20.19$) is significantly higher than girls ($X = 15.57$). Internal dysfunctional emotion regulation differs by gender ($t_{(333)} = -2.14$, $p < .05$). Internal dysfunctional emotion regulation of girls ($X = 14.78$) was significantly higher than boys ($X = 13.87$). Emotional autonomy ($t_{(333)} = .035$, $p > .05$), internal functional emotion regulation ($t_{(333)} = -1.33$, $p > .05$), external functional emotion regulation ($t_{(333)} = -.449$, $p > .05$) and external dysfunctional emotion regulation ($t_{(333)} = .203$, $p > .05$) do not differ by gender. Variables do not differ significantly according to grade level.

According to Table 2, while game addiction is positively correlated with aimless internet access, emotional autonomy and dysfunctional emotion regulation factors ($p < .01$), it was not found to be correlated with functional emotion regulation factor ($p > .05$). Emotional autonomy was not found to be correlated with internal emotion regulation ($p > .05$), while it was found to be correlated with other factors ($p < .01$).

Table 1. Demographic and Clinical Profile of the Participants

Variables	N=337 f, n (%)	M/SD	t *Gender	P	F*Grade	Post hoc
Gender						
Female(F)	188 (56.1)					
Male(M)	147 (43.9)					
Grade level						
9. grade	135 (40.3)					
10. grade	96 (28.7)					
11. grade	62 (18.5)					
12. grade	42 (12.5)					
GA		17.59/7.51	5.87**	M>F	.855	-
EA		52.34/8.09	.035		.795	-
IFRE		16.12/2.70	-1.33		.019	-
IDRE		14.38/3.90	-2.14*	F>M	1.07	-
EFRE		12.20/3.41	-.449		1.27	-
EDRE		10.28/3.67	.203		.471	-

** $p < .001$, * $p < .05$. GA: Game addiction; EA: Emotional autonomy; IFRE: Internal functional emotion regulation; IDRE: Internal dysfunctional emotion regulation; EFRE: External functional emotion regulation; EDRE: External dysfunctional emotion regulation

Table 2. Descriptive Statistics and Correlation

Variables	N	M/Sd	S	K	AIA	GA	EA	IFRE	IDRE	EFRE	EDRE
AIA	322	22.37/14.02	1.08	1.76	1						
GA	335	17.60/7.51	.92	.44	.203**	1					
EA	335	52.33/8.09	-.22	.62	.238**	.209**	1				
IFRE	335	16.12/2.70	-.78	1.30	.006	.025	-.080	1			
IDRE	335	14.38/3.90	.26	-.26	.078	.220**	.354**	.063	1		
EFRE	335	12.20/3.41	-.15	-.34	.078	-.029	-.165**	.257**	-.092	1	
EDRE	335	10.28/3.67	1.11	1.42	.202**	.268**	.297**	-.156**	.264**	.052	1

$p < .01$; K: Kurtosis; S: Skewness; AIA: Aimless internet access GA: Game addiction; EA: Emotional autonomy; IFRE: Internal functional emotion regulation; IDRE: Internal dysfunctional emotion regulation; EFRE: External functional emotion regulation; EDRE: External dysfunctional emotion regulation

Multiple Mediation Model Test

Before the variables were tested, linearity, univariate and multivariate normality, single and multicollinearity values (Ulman, 2015) were examined. Kurtosis and Skewness values examined for univariate normality (-.142 – 1.44) were found to be within acceptable limits (Bachman, 2004). For multivariate normality and linearity, scatter diagram matrix was examined and it was found that the shapes obtained were elliptical, therefore multivariate

normality and linearity assumptions were met. The value obtained from homogeneity test Box M showed that the variances were homogeneous (Box's $M=320.063$, $p>.05$). Variance Increase Factors (VIF) and Tolerance values were examined for multiple connection problem. It can be seen that VIF (1.129-1.240) values were smaller than 10, and tolerance values (.806-.885) were greater than 10. The values obtained show that there are no multiple connection problems (Çokluk et al., 2012). Autocorrelation between the variables was tested with Durbin Watson and the value obtained ($d_w=1.70$) was found to be within acceptable values (Küçükşille, 2014). The results found show that the assumptions required for testing the model were met.

The proposed model was tested in line with the hypotheses of the study. However, in parallel with the correlation analysis results in the proposed model, it was found that internal functional emotion regulation ($a_1= -.0052$, 95% CI [-.0221; .0048]) and external functional emotion regulation ($a_3= -.0043$, 95% CI [-.0149; .0257]) were not mediators in the relationship between emotional autonomy and game addiction. It was also found that the sequential effect of four dimensional emotion regulation was not significant ($a_1 d_{21} d_{32} d_{43} b_4= 0001$, 95% CI [-.0003; .0006]). Therefore, functional emotion regulation factors were excluded from the model and the finalized model is shown in Figure2.

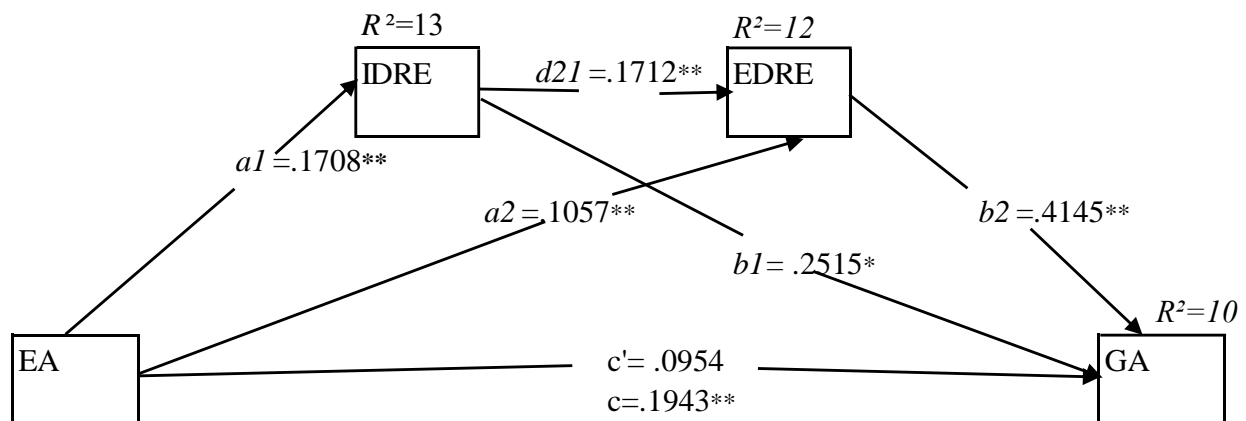


Figure 2. The Multiple Mediating Role of Dysfunctional Emotion Regulation

(* $p<.05$; ** $p<.001$. GA: Game addiction; EA: Emotional autonomy; IDRE: Internal dysfunctional regulation of emotion; EDRE: External dysfunctional regulation of emotion)

The proposed model was tested with Model Process Model 6. As can be seen in Figure 2, three indirect effects were tested (a_1b_1 , a_2b_2 , $a_1d_{21} b_2$). First of all, it can be seen that emotional autonomy predicted internal dysfunctional emotion regulation positively ($a_1= .1708^{**}$, 95% CI [.1222 - .2194]), while internal dysfunctional emotion regulation predicted game addiction positively ($b_1= .2515^{**}$, 95% CI [.0372 - .4659]). The indirect effect of emotional autonomy on game addiction through internal dysfunctional emotion regulation was found to be significant ($a_1b_1=.043$; 95% CI [.001 - .092]). According to this result, internal dysfunctional emotion regulation is a mediator.

Secondly, it can be seen that emotional autonomy predicts external dysfunctional emotion regulation positively ($a_2= .1057^{**}$, 95% CI [.0564 - .1549]), and external dysfunctional emotion regulation predicts game addiction

positively ($b_2 = .4145^{**}$, 95% CI [.1918 - .6373]). The indirect effect of emotional autonomy on game addiction through external dysfunctional emotion regulation was found to be significant ($a_2b_2 = .044$; 95% CI [.011 - .086]). According to this result, external dysfunctional emotion regulation is a mediator.

It was also found that internal dysfunctional emotion regulation predicted external dysfunctional emotion regulation positively ($d_2I = .1712^{**}$, 95% CI [.0690 - .2734]). Before examining the third indirect effect, the effect of independent variable (emotional autonomy) on the dependent variable (game addiction) was examined and it was found that emotional autonomy predicted game addiction positively ($c = .1943^{**}$, 95% CI [.0964 - .2922]). Finally, indirect serial effects of emotional autonomy on game addiction through internal dysfunctional emotion regulation and external dysfunctional emotion regulation were examined ($a_1d_{21} b_2 = .012$, 95% CI [003- 025]).

When internal dysfunctional emotion regulation and external dysfunctional emotion regulation were included in the analysis; in other words, when the mediating variables were checked, it was found that the relationship between emotional autonomy and game addiction became insignificant ($c' = .0954$, 95% CI [-.0089 - .1997]). According to these results, internal and external dysfunctional emotion regulation mediate the relationship between emotional autonomy and game addiction. When the model is evaluated as a whole, it can be seen that the model is significant ($F_{(3,331)} = 12.88$, $p < .001$) and the variables explain 10% of the variance regarding game addiction. The indirect effect for multiple mediation model and total, direct and indirect effect data regarding the model with bootstrap confidence interval are given in table 3.

Table 3. Total, Direct and Indirect Effect Data with Bootstrap Confidence Interval Regarding the Model

Model	Effect Size	BGa Lower Limit (BootLLCI)-	BGa Upper Limit (BootULCI)
Total effect	.194	.096	.292
Direct effect	.095	-.009	.200
Total indirect effect	.099	.043	.161
Indirect effect (EA→IDRE→GA)	.043	.001	.092
Indirect effect (EA→EDRE→GA)	.044	.011	.086
Indirect effect (EA→IDRE→EDRE→GA)	.012	.003	.025

EA= Emotional autonomy, IDRE= Internal dysfunctional emotion regulation, EDRE= External dysfunctional emotion regulation, GA= Game addiction, BGa= Bootstrap confidence interval, 5000 bootstrap sample corrected and cleared of bias

When the total indirect effect and the three indirect effect paths in Table 3 are examined, it is seen that the Bootstrap lower-upper confidence interval does not include 0. According to this result, internal dysfunctional emotion regulation and external dysfunctional emotion regulation mediate the relationship between emotional autonomy and game addiction. In addition, as seen in Figure 2, after the mediator variables are included in the model, the insignificance of the relationship between the independent variable and the dependent variable ($c' = .0954$, $p > .05$, 95% CI [-.0089 - .1997]) means that the mediating variables are fully mediated.

Discussion

This study examined the mediating roles of internal and external dysfunctional emotion regulation in the relationship between emotional autonomy and game addiction. According to the results, both variables act as full mediators in the relationship between emotional autonomy and game addiction.

According to the results obtained from the study, emotional autonomy predicts game addiction. The results of the study are in parallel with a study in literature examining the relationship between emotional autonomy and smart phone addiction (Güneş, 2018). Emotional autonomy may be stressful for adolescents (Beyers & Goosens, 1999). With this aspect, it causes negative effects on adolescent mental health (Sandhu & Kaur, 2012) and increases the probability of showing problematic behaviors (Lamborn & Steinberg, 1993). Emotional autonomy, which is harmful in a supportive family environment, may be directed towards adaptation in an insufficiently supportive family environment (Fuhrman & Holmbeck, 1995). Adolescents' behaviors towards adaptation may not always be functional. Tendency to a virtual world can be evaluated as one of the dysfunctional adaptive behaviors. Adolescents' seeking for the support they cannot receive from their families in the online world (Luciana, 2010), coping with their problems in the game world and gaining the respect they cannot have in the real world in virtual environments (Li & Wang, 2013) are dysfunctional adaptive behaviors. These maladaptive coping strategies, which can be evaluated as a result of unhealthy separation from the family (emotional autonomy) also explain the emergence of game addiction in adolescents.

According to the results of the study, emotional autonomy predicts both internal dysfunctional emotion regulation and external dysfunctional emotion regulation significantly positively. Self-determination theory (Deci & Ryan, 2000) considers autonomy as a basic need and refers to individuals' initiating their action and regulating their actions independently. The theory states that relationships with others are effective on autonomy. On the other hand, the concept of emotional autonomy has been discussed in a way to express unhealthy separation from the family. According to Ryan and Lynch (1989), emotional autonomy refers to not only getting rid of childhood bonds, but also to having problems about trusting parents and separating from parents. It can be seen that emotional autonomy is a two-sided concept.

Attachment theory is one of the theories explaining that unhealthy emotional autonomy predicts dysfunctional emotion regulation (Bowlby, 1958). Attachment theory focuses on the effects of early period experiences on the child's emotional development. It also tries to explain the development of and changes in strong emotional bonds between individuals (Brisch, 2012). According to the theory, the relationship established with the child will have a strong effect on the child's development and the child's future character (Steele, 2005). Ainsworth et al., (1978/2014) tried to explain the effect of attachment styles on behaviors and emotional reactions with "Strange Situation Test". According to the results of the experimental test, it can be said that avoidant attachment study is the basis of emotional autonomy. It has been found that babies with avoidant attachment do not care when they separate from their mothers in a strange environment, they do not show any positive emotions when they get back together and their mother's presence or absence does not mean anything to them. When the theory is examined in terms of emotional autonomy, which is considered as having problems with parents and separating from parents

(Ryan & Lynch, 1989), it can be said that adolescents who have avoidant attachment, which is an insecure attachment type, will experience their emotional autonomy negatively. Emotion regulation is associated with the regulation of all emotional states such as mood, stress and positive or negative effects (Rottenberg & Gross, 2003; Koole, 2009).

Attachment theory is also an emotion regulation theory and individuals with avoidant attachment experience problems in emotion regulation, they avoid discussing their emotions, they reject their emotions or suppress these emotions (Sümer et al., 2015). In other words, individuals with attachment disorder have dysfunctional emotions (Chara & Chara, 2005). It can be said that adolescents who separate from their families in an unhealthy way will experience problems in emotion regulation and regulate their emotions in a dysfunctional way.

According to the results of the study, dysfunctional emotion regulation (internal dysfunctional emotion regulation and external dysfunctional emotion regulation) predict game addiction significantly positively. This result of the study is in parallel with studies in literature (Barut, 2019; Ercengiz & Şar, 2017; Kaymakçı et al., 2022; Liu et al., 2017). In external dysfunctional emotion regulation, individuals try to satisfy their negative emotions (sadness, anger, etc.) by directing them to others in a verbal or behavioural way, while in internal dysfunctional emotion regulation individuals try to live what they feel in their inner world in a way that will harm themselves without talking to anyone (Duy & Yıldız, 2014). Dysfunctional emotion regulation has a central role in psychiatric problems and showing maladaptive behaviors (Kring & Sloan, 2010). In addition to these, online gaming disorder has taken its place in literature as a mental problem (WHO, 2018). The criteria of online gaming disorder include turning to games to avoid negative feelings or to relax and to feel sad, uneasy and anxious when not playing games (APA, 2013). In both criteria, it can be seen that individuals addicted to gaming cannot regulate their emotions functionally. According to this, it can be seen that not being able to regulate emotions functionally is effective in forming game addiction in adolescents.

Finally, dysfunctional internal and external emotion regulation mediates the relationship between emotional autonomy and game addiction. In a similar study, Ülkümen (2021) found that emotion regulation was a mediator in the relationship between emotional accessibility and game addiction. The positive correlation between dysfunctional emotion regulation and game addiction (Barut, 2019) and internet addiction (Ercengiz & Şar, 2017), the fact that problems in emotion regulation are effective in the emergence of psychological problems and maladaptive behaviors (Kring & Sloan, 2010) show how effective dysfunctional emotion regulation is in technological addictions. However, the skills of controlling, managing and expressing emotions in adolescents who are under the risk of game addiction due to their unhealthy separation from their families can act as a protection against game addiction.

Conclusions

The relationship between emotional autonomy, which occurs in the form of unhealthy separation from the family, and game addiction occurs through dysfunctional emotion regulation. According to this, dysfunctional emotion regulation has an important role in the emergence of game addiction in adolescents. In the study, the data were

collected with self-report scales. These tools can have limitations in exposing complicated structures such as addiction, emotion regulation and autonomy. Self-report scales can have the tendency to respond as desired or in a way that will be socially accepted as a limitation.

Clinicians may examine these concepts in game addiction cases by considering the effects of emotional autonomy and dysfunctional emotion regulation on game addiction. Educators can include studies to decrease the negative effects of dysfunctional emotion regulation and emotional autonomy in their psycho-educational studies to prevent game addiction. Researchers may test the relationships found in this study with other samples (university students, adults, etc.). It can be seen that there are not sufficient number of studies although game addiction is a serious risk factor for adolescents. More detailed data can be obtained about the dynamics of game addiction by studying game addiction in adolescents with different variables.

Notes

Funding: No funding was received for the research

Data Availability: The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

Ethical Approval: All procedures performed in studies involving human participants were in accordance with the national ethical standards and with the Helsinki declaration. The project was evaluated and approved by the internal ethics committee of Sakarya University.

Informed Consent: Informed consent was obtained from all individual participants included in the study.

Conflict of Interest: The authors have no competing interests to declare

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