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RESEARCH ARTICLE / ARAŞTIRMA YAZISI

Moderated Mediation Models of Emotion Regulation and Gender in the Relationships between Personality Disorders and Reinforcement Sensitivity

Kişilik Bozuklukları ve Pekiştireç Duyarlılıkları Arasındaki İlişkilerde Duygu Düzenleme ve Cinsiyetin Düzenleyici Aracılık Modelleri

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Abstract:

The differences between females and males in personality disorders and reinforcement sensitivity systems are stated in many studies. However, the underlying reasons for these differences are not clear, and also there are limited studies about the moderating role of gender via emotion regulation. In this respect, in this study it was aimed to examine the moderated mediation role of emotion regulation and gender in the relationships between reinforcement sensitivity systems and personality disorders. In the study, 427 (28.52±11.05) participants, 262 females (61.4%) and 165 males (38.6%) between the ages of 18-66 were included. Coolidge Axis II Inventory Plus Turkish-Short Form, Reinforcement Sensitivity Questionnaire and Difficulties in Emotion Regulation-Brief Form were used. Pearson Product Moments Correlation coefficient method, Fisher's Z test, independent samples t-test and Model 59 in the "PROCESS Macro v.3.5" program was applied for statistical analysis. It was found that Personality Disorder (PD), Borderline PD, Histrionic PD, Narcissistic PD, Avoidant PD, Dependent PD, BIS, Flight, Freeze and Difficulties in Emotion Regulation Scale scores were significantly higher in women; Antisocial PD scores were significantly higher in males. It was found that emotion regulation and gender have moderated mediation role in the models that include Schizoid PD, Dependent PD, Borderline PD, Antisocial PD, Obsessive Compulsive PD, Histrionic PD and Narcissistic PD. The findings show that men and women are affected in different ways from the difficulties in emotion regulation and reinforcement sensitivity systems in regards to personality disorders.

Keywords: emotion regulation, gender differences, moderated mediation, personality disorders, reinforcement sensitivity

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Öz:

Alanyazında kişilik bozukluklarında kadın ve erkekler arasındaki farklılıklar çok sayıda çalışma ile ortaya konmaktadır. Ancak bu farklılıkların altında yatan nedenler net bir şekilde açıklanamamaktadır ve cinsiyetin duygu düzenleme ile ilişkili olarak düzenleyici rolüne ilişkin sınırlı sayıda çalışma olduğu görülmektedir. Bu bağlamda, bu çalışmada kişilik bozuklukları ile pekiştireç duyarlılık sistemleri arasındaki ilişkilerde duygu düzenleme ve cinsiyetin düzenleyici aracılık rolünün incelenmesi amaçlanmıştır. Çalışmaya 18-66 yaş arası 262 kadın (%61, 4) ve 165 erkek (%38,6) olmak üzere toplam 427 (28,52±11,05) katılımcı dahil edilmiştir. Coolidge Eksen II Envanteri Plus Türkçe Kısa Formu, Pekiştireç Duyarlılık Ölçeği ve Duygu Düzenleme Güçlüğü Ölçeği- Kısa Form kullanılmıştır. İstatistiksel analizler için Pearson Momentler Çarpımı Korelasyon katsayısı yöntemi, Fisher Z testi, bağımsız örneklemler t-testi ve "PROCESS Macro v.3.5" programında yer alan Model 59 uygulanmıştır. Paranoid Kişilik Bozukluğu (KB), Borderline KB, Histrionik KB, Narsisistik KB, Çekingen KB, Bağımlı KB, DİS, Kaçma, Donma ve Duygu Düzenleme Güçlüğü Ölçeği puanlarının kadınlarda istatistiksel olarak anlamlı düzeyde yüksek olduğu; Antisosyal KB puanlarının erkeklerde istatistiksel olarak anlamlı düzeyde daha yüksek olduğu saptanmıştır. Düzenleyici aracılık analizinde Şizoid KB, Bağımlı KB, Borderline KB, Antisosyal KB, Obsesif Kompulsif KB, Histrionik KB ve Narsisistik KB'yi içeren modellerde cinsiyet ve duygu düzenlemenin düzenleyici aracılık rolüne sahip olduğu tespit edilmiştir. Elde edilen sonuçlar, kişilik bozuklukları açısından kadın ve erkeklerin pekiştireç duyarlılık sistemlerinden ve duygu düzenleme güçlüğünden farklı şekillerde etkilendiğini göstermektedir.

Anahtar Kelimeler: duygu düzenleme, cinsiyet farklılıkları, düzenleyici aracılık, kişilik bozuklukları, pekiştireç duyarlılığı

Introduction

In neurobiological-based Reinforcement Sensitivity Theory (RST), developed by Gray (1981), a neurobehavioral model is offered on the basis of motivational systems. In this model, three systems are defined in relation to behaviors and mood. One of these systems is Behavioral Activation System (BAS), defined as related to impulsivity and sensitivity to reward. Another system is Behavioral Inhibition System (BIS) and it is claimed that it is associated with anxiety and sensitivity to punishment. And the last system is defined as Fight-Flight System (FFS) which is related to psychoticism and sensitivity to unconditionally aversive stimuli.

In the light of following studies, the systems in RST were functionally revised (Gray & McNaughton, 2000). In the revised RST, a new sub-dimension was added to FFS as "Freeze", and as a result its name changed as Fight-Flight-Freeze System (FFFS). Gray (1981) claimed that hyperactivation in these systems is one of the factors that have a role in the existence of psychopathology. There are many studies that support Gray's claim about the relationship between psychopathology and BIS, BAS, FFFS systems (Bilge & Balaban, 2019; Gupta & Shukla, 1989; Heritage et al., 2018).

In personality disorders, lack of emotion regulation is also considered as a risk factor. For instance, adjustment problems, problems in interpersonal relationships, lack of empathy, impulsivity, rigid attitude, low level of stress resistance, and lack of emotional and cognitive flexibility are seen in personality disorders (American Psychiatric Association (APA), 2013; Arıcı-Özcan, 2019; Ouellet et al., 2019; Schwartz Mette et al., 2020). As the ability of emotion regulation is a fundamental skill that develops from the beginning of the childhood, it can be said that poor skills in emotion regulation may be one of the underlying reasons in development of personality disorders.

Moreover, gender-related differences can also have a role in personality disorders and has been one of the research topics in the literature (Corbitt & Widiger, 1995). It is stated that Antisocial Personality Disorder (PD), Schizoid PD, Schizotypal PD and Obsessive-compulsive PD were seen more in males, whereas Borderline PD, Histrionic PD and Dependent PD are more common in females (APA, 2013). In line with DSM 5, in a study it was found that Obsessive-compulsive PD, Narcissistic PD, and Antisocial PD were more common in men (Golomb et al., 1995). In another study it was found that Schizotypal PD was more common in men, and Borderline PD and Dependent PD were more common in women (Matsunaga et al., 2010).

Gender-related differences in the prevalence of personality disorders could be related to the differences in neurobiological systems in men and women (Corbitt & Widiger, 1995). In the studies, in which the gender differences were investigating in terms of activation of BIS and BAS systems, it was found that BIS (Carver & White, 1994) and "reward-seeking" (Jorm et al., 1999) which is a subscale of the BAS, were higher in women. Also, neuroticism which is associated with BIS and seen at a higher level in women (Bilge & Bilge, 2017) is found to be related to Paranoid PD, Histrionic PD, Avoidant PD and Dependent PD (Brieger et al., 2000) and Borderline PD (Distel et al., 2009). In this regard, it can be thought that gender could be a moderating variable in the relationships between reinforcement sensitivity systems and personality disorders. In addition, the findings related to gender-related differences in emotion regulation (Lopez et al.,

2009; Tamres et al., 2002) could be shown as evidence for the interaction of gender and emotion regulation in the relationships between personality disorders and reinforcement sensitivity systems.

Personality disorders (APA, 2013) and reinforcement sensitivity systems (Carver & White, 1994; Jorm et al., 1999) also differ according to gender. However, it could be said that there is not enough information about the relationships between gender, personality disorders, reinforcement sensitivity and emotion regulation. With this regard, in our study it was aimed to examine the relationships between personality disorders and reinforcement sensitivity systems by taking consideration of possible mediation and moderation effects of emotion regulation and gender on this relationship.

While determining the model of the study, the order of development of the variables and their possible effects on each other were considered according to the studies in the literature. The reinforcement sensitivity systems have a biological basis, and it is obvious that these systems develop earlier and may have effects on the development of personality disorders and emotion regulation skills. Therefore in our study reinforcement sensitivity systems are evaluated as variables that may influence on existence and level of the emotion regulation ability and personality disorders.

When the other variables are evaluated according to their order of development, emotion regulation is one of the mechanisms develop in the early childhood (Álvarez et al., 2022), however personality disorders occur as a result of interaction of biological systems and the environment, and are diagnosed in adulthood (Wilson et al., 2021).

In this study model, as the gender is a categorical variable and it does not have a direct effect on variables but may have an effect on the relationships between the variables, gender was evaluated as a moderating variable. In the moderation analysis the correlational relationship between the moderator and the other variables is not required and is not expected (Baron & Kenny, 1986). It is known that emotion regulation is differentiated according to the gender (Lopez et al., 2009; Tamres et al., 2002). In moderated mediation models, it is supposed that the moderator may has influence on the mediator or in other words the mediator is differentiated according to the moderator, therefore the model of this study was formed as moderated mediation.

As a result, in this study with this moderated mediation model it was investigated whether the interaction between emotion regulation and gender strengthen or weaken the relationships between the personality disorders and reinforcement sensitivity systems. Therefore the hypotheses that were tested in this study were determined as below:

Hypothesis 1 (H1). Personality disorders, reinforcement sensitivity systems and emotion regulation are differentiated according to gender.

Hypothesis 2 (H2). Emotion regulation and gender have moderated mediation role in the relationships between personality disorders and reinforcement sensitivity systems. Specifically, gender has a direct or indirect effect on the paths where emotion regulation has a mediating role in the relationships between personality disorders and reinforcement sensitivity systems.

Methods

Participants

The data was collected by convenience sampling method between 05.01.2022 and 05.02.2022, and the sample in the study was a total of 427 (28.52±11.05) individuals, 262 females (61.4%) and 165 males (38.6%) between the ages of 18-66. In the study, 13 (3.0%) of the participants were primary school graduates, 45 (10.5%) high school graduates, and 369 (86.4%) university graduates; 287 (67.2%) were single, 131 (30.7%) were married, 7 (1.6%) were divorced, and 2 (0.5%) were widowed. In terms of socioeconomic status, 35 (8.2%) participants reported low, 368 (86.2%) medium and 24 (5.6%) high levels. Twenty-seven (6.3%) participants stated that they were receiving psychological or psychiatric help, 173 (40.5%) reported that they felt the need for psychological help.

Data Collection Tools

Coolidge Axis II Inventory Plus Turkish Short Form (CATI+TR SF).

CATI+TR-SF (Bilge, 2018) is a four-point Likert-type scale consisting of 78 items, which is the shorten version of CATI+ (Coolidge, 2006) with 250 items. There are ten sub-dimensions in this inventory as Paranoid PD, Schizotypal PD, Schizoid PD, Antisocial PD, Borderline PD, Histrionic PD, Narcissistic PD, Obsessive Compulsive PD, Avoidant PD, Dependent PD. These sub-dimensions give information related to personality disorders in respect to dimensional approach. The high scores in sub-dimensions are evaluated as tendency to have the personality disorders. In the original study, the Cronbach's Alpha values for CATI+TR-SF were found between 0.66 and 0.77.

In the test-retest analysis, the values of correlation coefficients were found to be between 0.77 and 0.89. As a result of convergent validity analysis, the correlation coefficients for CATI+TR-SF with the SCID-II-KA subscales were determined between 0.27 - 0.78 and Personality Belief Scale subscales were found between 0.35 - 0.64. In our study, the Cronbach's Alpha values were found as 0.79 for Paranoid PD, 0.72 for Schizotypal PD, 0.51 for Schizoid PD, 0.65 for Antisocial PD, 0.82 for Borderline PD, 0.73 for Histrionic PD, 0.76 for Narcissistic PD, 0.69 for Obsessive Compulsive PD, 0.77 for Avoidant PD, and 0.81 for Dependent PD.

Reinforcement Sensitivity Questionnaire (RSQ).

RSQ was developed by Smederevac et al. (2014), and it has five subscales: BAS, BIS, Fight, Flight and Freeze. The high scores are evaluated for BIS as tendecy to be introvert, and for BAS as tendency to be extravert. For Fight high scores indicate tendency to antisocial behaviours and psychoticism, for Flight and Freeze high scores are considered as sensitivity to unconditionally aversive stimuli. It is claimed that the individuals with high scores in Flight generally tend to run away from the theratening object or situation, whereas the individuals with high scores in Freeze tend to lose their ability to act in a logical way.

The Turkish adaptation of the questionnaire was performed by Balaban and Bilge (2021). The questionnaire has 27 items, and it is a four-point Likert type. In the original RSQ, the Cronbach's Alpha value was found for BIS as 0.86, for BAS as 0.78, for Fight as 0.82, for Flight as 0.69, and for Freeze as 0.87.

In the Turkish adaptation of RSQ, Cronbach's Alpha values were found to be 0.81 for BIS, 0.71 for BAS, 0.78 for Fight, 0.83 for Flight, and 0.82 for Freeze; and correlation values were determined between 0.22 and 0.65 for the subscales of RSQ and Eysenck Personality Questionnaire, STAI-II Anxiety Inventory, and BIS/BAS scale in the convergent validity analysis. In our study, the Cronbach's Alpha values were determined as 0.61 for BIS, 0.73 for BAS, 0.56 for Fight, 0.59 for Flight, and 0.62 for Freeze.

Difficulties in Emotion Regulation Scale – Brief Form (DERS-16).

The study of original scale was conducted by Bjureberg et al. (2016) and the Turkish reliability and validity study was made by Yiğit and Guzey Yiğit (2019). The scale is a 5-point Likert-type scale and includes 16 items. There are five subscales in the scale: "clarity, goals, impulse, strategies, non-acceptance".

In the Turkish version of DERS-16, the Cronbach's Alpha coefficients were determined between 0.78 and 0.87. In our study the total score is used for evaluating emotion regulation, and the Cronbach's Alpha value for total score was found as 0.96. In the scale also the total score could be used for measuring the level of difficulty in emotion regulation, and high scores are evaluated to indicate a high level of difficulty in emotion regulation.

Procedure

Ethics committee approval dated 31.12.2021 and numbered 2021/12 was obtained from the Ethics Committee of İstanbul Sabahattin Zaim University for this study. Data was obtained by paper/pencil method and the data was collected by convenience sampling method from the researchers' circle on the basis of voluntariness.

On the first page of the questionnaries, all participants were given consent for their data to be used in the research, and they were informed that they could withdraw at any time. In the study, filling the questionnaires lasted almost 15 minutes. No gift or fee were offered to the participants.

In our study one of the exclusion criterias was being younger than 18 years old. The second exclusion criteria in our study was to respond the items 55 and/or 70 in CATI+TR SF other than 1 point (absolutely incorrect), which indicates that the questionnaires were filled in randomly or carelessly. The third exclusion criteria was leaving most of the items in the questionnaires blank.

In our study, a total of 480 participants filled out the questionnaires and regarding the exclusion criterions, the data of 53 participants that were determined not to meet inclusion criterions were excluded.

The Gpower program (Erdfelder et al., 1996) was used to determine the statistical power of study and it was determined as 0.96. In the analysis, the significance level was 0.05, the effect size was 0.3, and the power of the test was 80.

In the study the correlational research design was used in which the relationships between the variables are examined. In line with this, to examine the correlations between the variables Pearson Product Moments Correlation coefficient method was performed (Table 1). Fisher's Z test was used to determine if there is a significantly differentiation between the correlation values. Independent samples t-test was applied to determine whether there is a statistically significant difference between the variables according to gender.

Model 59 in the "PROCESS Macro v.3.5" program was used for moderated mediation analysis (Hayes, 2018), and in the analysis 5,000 bootstrap method was used. The absence of zero in the 95% confidence interval is accepted as evidence that the mediation and moderation effects are significant (Hayes, 2018). Graphs of moderated mediation analysis were formed by using the Johnson-Neyman method, and the values of 1 standard deviation below and 1 standard deviation above the mean were used. The proposed and statistical model of the moderated mediation model is given in Figure 1.

In the moderated mediation model, reinforcement sensitivity systems were determined as the independent variable (X), difficulties in emotion regulation as the mediator (M), personality disorders as the dependent variable (Y), and gender as the moderator (W). The statistical model is defined with the following equations (Hayes, 2018):

$$M = i_M + a_1X + a_2W + a_3XW \quad (1)$$

$$Y = i_Y + c_1X + b_1M \quad (2)$$

According to the first equation, the effect of X on M:

$$\theta_{X \rightarrow M} = a_1 + a_3W \quad (3)$$

The indirect effect of X on Y, mediated by M, as the total of X's effect on M and M's effect on Y:

$$a_1\theta_{X \rightarrow Y} = a_1b_1 + a_1b_2W \quad (4)$$

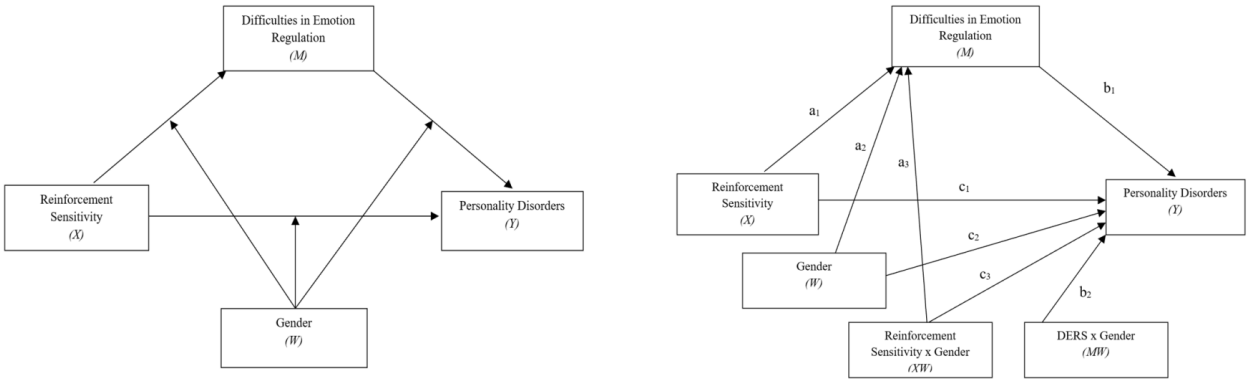
Table 1. The mean and standard deviation values of the variables, the correlation coefficients between the personality disorders, subscales of RSQ and DERS-16, and results of comparison between the correlations in samples of female and male (Z and p values according to Fisher's Z test)

		Mean (SD)	Paranoid PD	Schizotypical PD	Schizoid PD	Antisocial PD	Borderline PD	Histrionic PD	Narcisistic PD	Obsessive-copmpulsive PD	Avoidant PD	Dependent PD	DERS
	Female	17.11 (5.38)	0.37**	0.42**	0.23**	0.26**	0.58**	0.40**	0.45**	0.63**	0.69**	0.69**	0.67**
BİS	Male	14.71 (4.78)	0.47**	0.34**	0.21**	0.28**	0.50**	0.49**	0.49**	0.55**	0.57**	0.56**	0.78**
	Total	16.19 (5.18)	0.41**	0.37**	0.20**	0.23**	0.56**	0.45**	0.49**	0.61**	0.67**	0.66**	0.72**
Z(*p*)	-	-	-1.21 (0.11)	0.93 (018)	0.21(0.42)	-0.22 (0.42)	1.13 (0.13)	-1.12 (0.13)	-0.51 (0.30)	1.23 (0.11)	**2.00 (0.02*)**	**2.15 (0.02*)**	**-2.34(0.01**)**
	Female	13.94 (3.19)	0.15*	0.25**	-0.05	0.25**	0.20**	0.25**	0.23**	0.01	-0.06	-0.00	0.04
BAS	Male	14.48 (3.07)	0.36**	0.39**	0.07	0.33**	0.33**	0.33**	0.31**	0.30**	0.03	-0.02	0.18*
	Total	14.15 (3.15)	0.21**	0.31**	0.00	0.29**	0.23**	0.25**	0.23**	0.11*	-0.05	-0.02	0.08
Z (*p*)	-	-	**-2.25 (0.01**)**	-1.56 (0.06)	-1.2 (0.12)	-0.87 (0.19)	-1.40 (0.08)	-0.87 (0.19)	-0.86 (0.19)	**-2.99 (0.00**)**	-0.90 (0.18)	1.10 (0.14)	-1.42 (0.08)
	Female	12.70 (3.21)	0.47**	0.36**	0.26**	0.48**	0.44**	0.40**	0.40**	0.36**	0.22**	0.21**	0.25**
FIGHT	Male	13.13 (3.25)	0.52**	0.35**	0.12	0.50**	0.43**	0.24**	0.26**	0.30**	0.15	0.20*	0.26**
	Total	12.87 (3.23)	0.47**	0.36**	0.21**	0.49**	0.42**	0.33**	0.32**	0.33**	0.18**	0.19**	0.24**
Z (*p*)	-	-	-0.66 (0.25)	0.11 (0.46)	1.45 (0.07)	-0.26 (0.40)	0.12 (0.45)	**1.79 (0.04*)**	1.57 (0.06)	0.67 (0.25)	0.72 (0.24)	0.10 (0.46)	-0.11 (0.46)
	Female	14.82 (3.14)	0.09	0.10	0.03	-0.03	0.15*	0.09	0.18**	0.17**	0.31**	0.27**	0.29**
FLIGHT	Male	13.18 (2.94)	0.12	0.12	0.06	-0.06	0.10	0.21**	0.29**	0.18*	0.32**	0.13	0.30**
	Total	14.19 (3.16)	0.12*	0.10*	0.02	-0.07	0.16**	0.17**	0.27**	0.19**	0.34**	0.25**	0.32**
Z (*p*)	-	-	-0.30 (0.38)	-0.20 (0.12)	-0.30 (0.38)	0.30 (0.38)	0.51 (0.31)	-1.23 (0.11)	-1.16 (0.12)	-0.10 (0.46)	-0.11 (0.46)	1.46 (0.07)	-0.11 (0.46)
	Female	11.01 (4.08)	0.37**	0.38**	0.14*	0.25**	0.48**	0.39**	0.35**	0.51**	0.55**	0.57**	0.64**
FREEZE	Male	8.57 (3.24)	0.39**	0.35**	0.17*	0.19*	0.45**	0.40**	0.40**	0.47**	0.55**	0.60**	0.68**
	Total	10.07 (3.96)	0.39**	0.34**	0.11*	0.18**	0.49**	0.43**	0.41**	0.49**	0.57**	0.59**	0.66**
Z (*p*)	-	-	-0.23 (0.41)	0.35 (0.37)	-0.31 (0.38)	0.63 (0.26)	0.38 (0.35)	-0.12 (0.45)	-0.58 (0.28)	0.53 (0.30)	0.00 (0.50)	-0.46 (0.32)	-0.71 (0.24)
	Female	31.68 (16.39)	0.52**	0.54**	0.25**	0.38**	0.70**	0.54**	0.49**	0.61**	0.62**	0.71**	-
DERS-16	Male	26.35 (15.18)	0.54**	0.44**	0.34**	0.42**	0.60**	0.51**	0.58**	0.60**	0.58**	0.57**	-
	Total	29.62 (16.12)	0.53**	0.49**	0.26**	0.37**	0.67**	0.54**	0.53**	0.61**	0.62**	0.68**	-
Z (*p*)	-	-	-0.28 (0.39)	1.32 (0.09)	-0.99 (0.16)	-0.48 (0.32)	**1.74 (0.04*)**	0.41 (0.34)	-1.26 (0.10)	0.16 (0.44)	0.62 (0.27)	**2.39 (0.01**)**	-
Mean (SD)	Female	-	17.25 (5.40)	13.91 (4.28)	15.24 (3.59)	12.34 (3.50)	18.61 (6.43)	16.27 (4.58)	20.02 (4.86)	20.13 (4.98)	17.29 (5.19)	13.11 (4.67)	31.68 (16.39)
Mean (SD)	Male	-	16.24 (4.65)	14.22 (4.74)	15.92 (3.66)	13.16 (4.41)	16.97 (5.54)	14.58 (3.78)	17.52 (4.88)	19.20 (4.93)	15.18 (4.10)	11.69 (4.09)	25.35 (15.18)
Mean (SD)	Total	-	16.86 (5.14)	14.03 (4.46)	15.50 (3.63)	12.66 (3.89)	17.98 (6.14)	15.62 (4.36)	19.05 (5.01)	19.77 (4.98)	16.48 (4.91)	12.56 (4.50)	29.62(16.12)

*$p<0.05$ **$p<0.01$ BIS=Behavioral Inhibition System, BAS= Behavioral Activation System, DERS-16= Difficulties in Emotion Regulation Scale- Brief Form

Note: The results of Fisher's Z test that are statistically significant are given in bold in the table.

Figure 1. The proposed and statistical moderated mediation model of the study



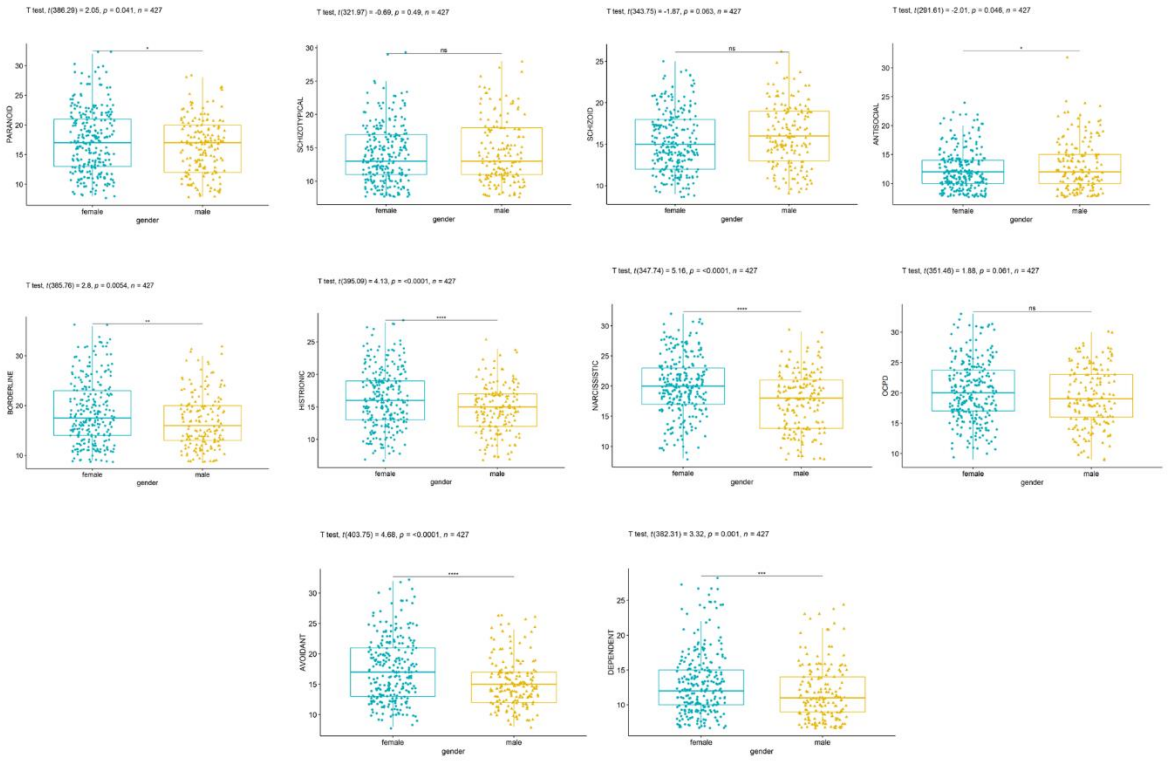
Results

In this section, the results of analyses related to comparison of subscales by gender and moderated mediation role of gender and emotion regulation, were given. For comparison by gender, the independent groups t-test analysis was applied. For moderated mediation analysis, the model 59 in the "PROCESS Macro v.3.5" program was used. For determining the moderated mediation model of emotion regulation and gender, fifty models were tested, and as a result, in 9 models the results were found statistically significant. In our study the results of these 9 models were given and discussed. The cut-off scores were determined as 1 standard deviation above the mean and 1 standard deviation below the mean for each independent variable to show the moderated role of gender in the models.

Results of the comparison of subscales by gender (H1)

As a result of the independent groups t-test analysis, it was found that the scores of Paranoid PD (t(386.29) = 2.05, p = 0.02), Borderline PD (t(385.76) = 2.80, p = 0.0054), Histrionic PD (t(395.09) = 4.13, p < 0.0001), Narcissistic PD (t(347.74) = 5.16, p < 0.0001), Avoidant PD (t(403.75) = 4.68, p < 0.001), Dependent PD (t(382.31) = 3.32, p < 0.001), BIS (t(393.61) = 4.98, p < 0.0001), Flight (t(364.91) = 5.47, p < 0.0001), Freeze (t(402.65) = 6.84, p < 0.0001) subscale scores and DERS-16 (t(368.43) = 4.42, p = 0.001) are statistically significantly higher in females. In addition, the scores of Antisocial PD (t(291.61) = -2.01, p = 0.001) were found to be statistically significantly higher in males. No differentiation was found for the other personality disorders and subscales according to gender (Figure 2).

Figure 2. The results of independent samples t-test analysis of personality disorders according to gender



Results of Moderated Mediation Analysis (H2)

As a result of the moderated mediation analysis, it was found that emotion regulation and gender have moderated mediation role in the relationships between BIS and Schizoid PD and Antisocial PD; BAS and Borderline PD; Fight and Dependent PD; Freeze and Antisocial PD. In addition, it was determined that gender has a moderating role in the relationships between BIS and DERS-16; Obsessive-compulsive PD and BAS; Dependent PD and Freeze; Fight and Histrionic PD; Fight and Narcissistic PD (Table 2) (Figure 3).

Table 2. The results of moderated mediation analysis

		Outcomes													
		Difficulties in Emotion Regulation (*M*)								SCHIZOID PD (*Y*)					
					95% CI								95% CI		
		B	SE	*p*	LLCI	ULCI	R^2	F		B	SE	*p*	LLCI	ULCI	R^2	F
BIS	a_1	2.04	.13	<.001	1.79	2.30	.52	152.19	c_1	.08	.05	.12	-.02	.19	.10	9.17
DERS	-	-	-	-	-	-			b_1	.04	.02	.04	.00	.07		
Gender	a_2	-9.31	3.80	.01	-16.77	-1.85			c_2	1.01	.36	.01	.31	1.71		
BIS x Gender	**a_3**	**.60**	**.23**	**.01**	**.14**	**1.06**			c_3	-.20	.11	.07	-.42	.02		
DERS x Gender	-	-	-	-	-	-			**b_2**	**.07**	**.03**	**.03**	**.01**	**.14**		
		Difficulties in Emotion Regulation (*M*)								BORDERLINE PD (*Y*)					
					95% CI								95% CI		
		B	SE	*p*	LLCI	ULCI	R^2	F		B	SE	*p*	LLCI	ULCI	R^2	F
BAS	a_1	.20	.31	.52	-.41	.80	.04	5.56	c_1	.35	.09	<.001	.18	.52	.49	80.96
DERS	-	-	-	-	-	-			b_1	.27	.02	<.001	.24	.30		
Gender	a_2	-15.42	7.42	.04	-29.99	-.85			c_2	.55	2.14	.80	-3.66	4.76		
BAS x Gender	a_3	.69	.51	.17	-.31	1.69			c_3	.05	.14	.72	-.23	.33		
DERS x Gender	-	-	-	-	-	-			**b_2**	**-.06**	**.03**	**.03**	**-.12**	**-.01**		
		Difficulties in Emotion Regulation (*M*)								DEPENDENT PD (*Y*)					
					95% CI								95% CI		
		B	SE	*p*	LLCI	ULCI	R^2	F		B	SE	*p*	LLCI	ULCI	R^2	F
FIGHT	a_1	1.26	.30	<.001	.67	1.84	.09	13.41	c_1	.06	.07	.39	-.07	.19	.46	70.33
DERS	-	-	-	-	-	-			b_1	.20	.01	<.001	.17	.22		
Gender	a_2	-5.14	6.36	.42	-17.65	7.37			c_2	.74	1.40	.60	-2.02	3.50		

FIGHT x Gender	a_3	-.05	.48	.91	-.99	.88			c_3	.01	.11	.91	-.20	.22	
DERS x Gender	-	-	-	-	-	-			**b_2**	**-.05**	**.02**	**.03**	**-.09**	**-.01**	

		Difficulties in Emotion Regulation (*M*)								ANTISOCIAL PD (*Y*)						
					95% CI								95% CI			
		B	SE	*p*	LLCI	ULCI	R^2	F		B	SE	*p*	LLCI	ULCI	R^2	F
BIS	a_1	2.04	.13	<.001	1.79	2.30	.52	152.19	c_1	-.00	.05	.99	-.11	.11	.17	17.72
DERS	-	-	-	-	-	-			b_1	.11	.02	<.001	.08	.14		
Gender	a_2	-9.31	3.80	.01	-16.77	-1.85			c_2	1.30	.37	<.001	.57	2.02		
BIS x Gender	a_3	**.60**	**.23**	**.01**	**.14**	**1.06**			c_3	-.12	.11	.29	-.34	.10		
DERS x Gender	-	-	-	-	-	-			**b_2**	**.07**	**.03**	**.05**	**.00**	**.14**		

		Difficulties in Emotion Regulation (*M*)								ANTISOCIAL PD (*Y*)						
					95% CI								95% CI			
		B	SE	*p*	LLCI	ULCI	R^2	F		B	SE	*p*	LLCI	ULCI	R^2	F
FREEZE	a_1	2.56	.18	<.001	2.20	2.92	.44	110.46	c_1	.00	.07	.98	-.14	.14	.18	18.40
DERS	-	-	-	-	-	-			b_1	.08	.02	<.001	.05	.12		
Gender	a_2	-4.28	3.44	.21	-11.03	2.47			c_2	1.36	1.01	.18	-.63	3.34		
FREEZE x Gender	a_3	.61	.34	.08	-.07	1.29			c_3	-.24	.14	.07	-.51	.02		
DERS x Gender	-	-	-	-	-	-			**b_2**	**.08**	**.03**	**.01**	**.02**	**.13**		

		Difficulties in Emotion Regulation (*M*)								OCPD (*Y*)						
					95% CI								95% CI			
		B	SE	*p*	LLCI	ULCI	R^2	F		B	SE	*p*	LLCI	ULCI	R^2	F
BAS	a_1	.20	.31	<.001	-.41	.80	.04	5.56	c_1	-.02	.08	.77	-.17	.13	.39	53.31
DERS	-	-	-	-	-	-			b_1	.19	.01	<.001	.16	.21		
Gender	a_2	-15.42	7.42	.04	-29.99	-.85			c_2	-4.85	1.90	.01	-8.58	-1.11		
BAS x Gender	a_3	.69	.51	.17	-.31	1.69			**c_3**	**.34**	**.13**	**.01**	**.09**	**.59**		
DERS x Gender	-	-	-	-	-	-			b_2	-.00	.03	.97	-.05	.05		

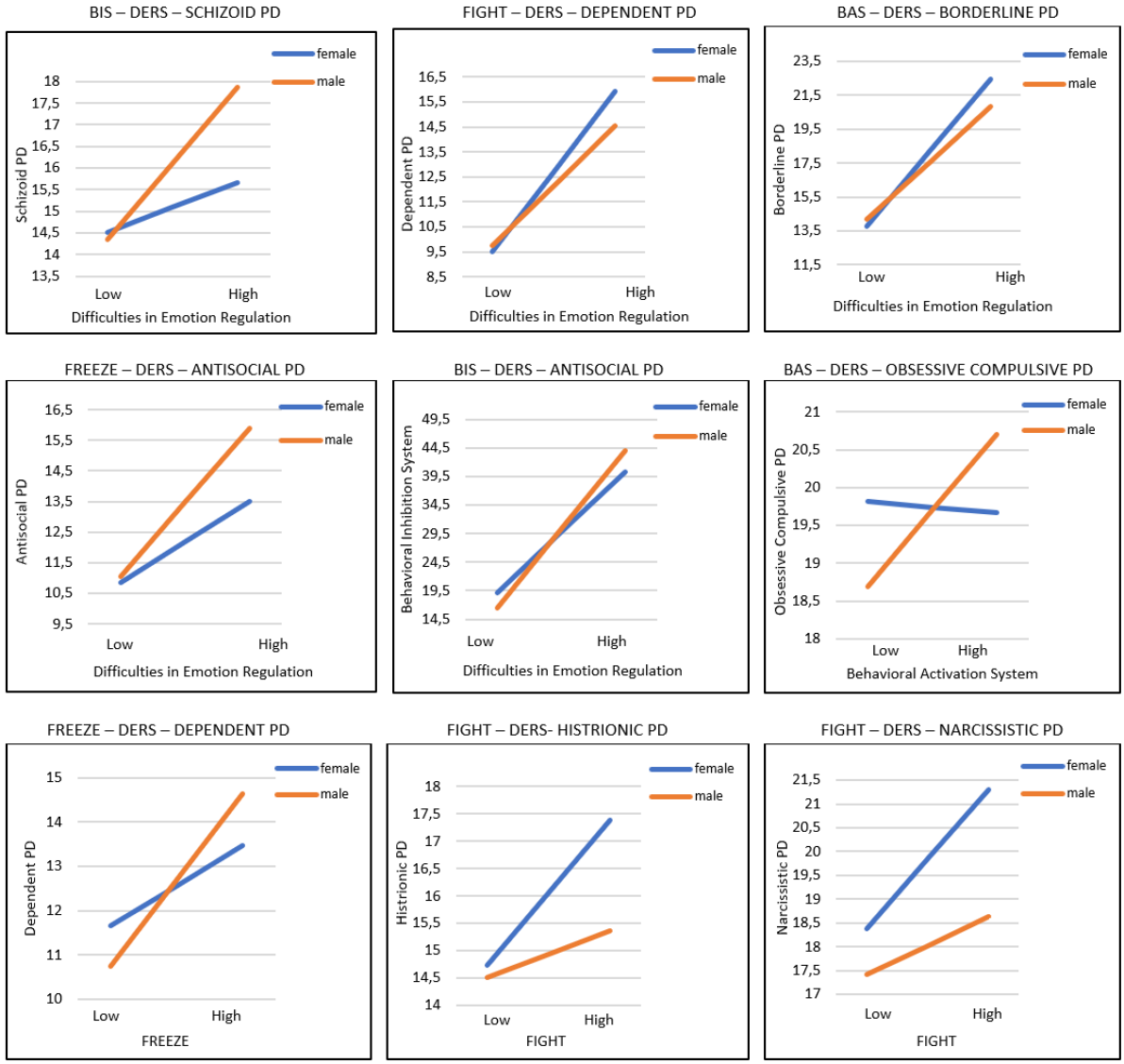
		Difficulties in Emotion Regulation (*M*)								DEPENDENT PD (*Y*)						
					95% CI								95% CI			
		B	SE	*p*	LLCI	ULCI	R^2	F		B	SE	*p*	LLCI	ULCI	R^2	F
FREEZE	a_1	2.56	2.16	.11	-.75	7.73	.44	110.46	c_1	.23	.06	<.001	.11	.35	.50	82.62
DERS	-	-	-	-	-	-			b_1	.16	.02	<.001	.13	.20		
Gender	a_2	-4.28	3.44	.21	-11.03	2.47			c_2	-.06	.91	.95	-1.85	1.74		
FREEZE x Gender	a_3	.61	.34	.08	-.07	1.29			**c_3**	**.26**	**.12**	**.03**	**.02**	**.50**		
DERS x Gender	-	-	-	-	-	-			**b_2**	**-.08**	**.03**	**.003**	**-.14**	**-.03**		

		Difficulties in Emotion Regulation (*M*)								HISTRIONIC PD (*Y*)						
					95% CI								95% CI			
		B	SE	*p*	LLCI	ULCI	R^2	F		B	SE	*p*	LLCI	ULCI	R^2	F
FIGHT	a_1	1.26	.30	<.001	.67	1.84	.09	13.41	c_1	.41	.07	<.001	.27	.55	.36	48.12
DERS	-	-	-	-	-	-			b_1	.13	.01	<.001	.10	.16		
Gender	a_2	-5.14	6.36	.42	-17.65	7.37			c_2	2.75	1.47	.06	-.14	5.64		
FIGHT x Gender	a_3	-.05	.48	.91	-.99	.88			**c_3**	**-.28**	**.11**	**.01**	**-.50**	**-.06**		
DERS x Gender	-	-	-	-	-	-			b_2	-.01	.02	.67	-.06	.04		

		Difficulties in Emotion Regulation (*M*)								NARCISSISTIC PD (*Y*)						
					95% CI								95% CI			
		B	SE	*p*	LLCI	ULCI	R^2	F		B	SE	*p*	LLCI	ULCI	R^2	F
FIGHT	a_1	1.26	.30	<.001	.67	1.84	.09	13.41	c_1	.45	.08	<.001	.29	.61	.36	48.07
DERS	-	-	-	-	-	-			b_1	.12	.02	<.001	.09	.15		
Gender	a_2	-5.14	6.36	.42	-17.65	7.37			c_2	.20	1.69	.91	-3.12	3.52		
FIGHT x Gender	a_3	-.05	.48	.91	-.99	.88			**c_3**	**-.26**	**.13**	**.04**	**-.51**	**-.01**		
DERS x Gender	-	-	-	-	-	-			b_2	.05	.03	.09	-.01	.10		

DERS: Difficulties in Emotion Regulation; PD: Personality disorder; BIS: Behavioral inhibition system; BAS: Behavioral activation system; SE: Standard error; LLCI: Lower limit of the confidence interval; ULCI: Upper limit of the confidence interval
Note: The paths given in bold are statistically significant results

Figure 3.The moderating role of gender on the relationships between the variables in the study. It is graphed as two levels (low and high): 1 standard deviation above the mean and 1 standard deviation below the mean.



NOTE: The graphs given in the Figure 2 are statistically significant results obtained from the moderated mediation anlyses.

Discussion

Theoritical Implications

In this study, it was aimed to examine the moderated mediation role of emotion regulation and gender in the relationships between personality disorders and reinforcement sensitivity systems. In this direction, firstly it was investigated whether personality disorders, reinforcement sensitivity systems and difficulties in emotion regulation were differentiated according to gender. Secondly, the moderated mediation role of emotion regulation and gender was examined in the relationships between PDs and reinforcement sensitivity systems, as well as the moderating role of gender on the paths in the models was investigated.

As a result of the comparison according to gender (H1), it was found that Paranoid PD, Borderline PD, Histrionic PD, Narcissistic PD, Avoidant PD, Dependent PD, BIS, Flight, Freeze subscale scores and DERS-16 were statistically significantly higher in women. Antisocial PD scores were determined to be statistically significantly higher in males. As a result it is seen that the findings in our study are partially in accordance with the literature (APA, 2013).

Unlike the studies in the literature (Paris, 2004; Schulte Holthausen & Habel, 2018), in our study Paranoid PD and Narcissistic PD were found to be higher in women. This differentiation may be due to recent changes in masculine or feminine roles over the years (Frank et al., 1984). In addition, the fact that masculine features are associated with BAS (Lombardo et al., 2012), this result may indicate that BAS levels may also increase in women. Especially positive correlations between BAS and Narcissistic PD and also Paranoid PD (Pastor et al., 2007) support this assumption.

As a result of the moderated mediation analysis, moderated mediation role of gender and emotion regulation was found in some models (H2). On the paths between BIS and Schizoid PD, BIS and Antisocial PD, Schizoid PD and DERS-16, Antisocial PD and DERS-16, the moderating role of gender was determined. Specifically, it was determined that increase in difficulties in emotion regulation was related to a higher increase in

Schizoid PD and Antisocial PD in men. In addition, similarly, with the increase in difficulties in emotion regulation in the relationship between Freeze and Antisocial PD, a higher increase in Antisocial PD was found in males. In this regard, as a summary it can be said that difficulties in emotion regulation is a risk factor for Schizoid PD and Antisocial PD in their relationships with BIS and Freeze in men.

BIS has a function in the decision-making mechanism depending on the current anxiety level in conflict situations (Gray & McNaughton, 2000). In this respect, it can be thought that with the relation to high level BIS, the increased anxiety may be a risk factor for conduct disorder and impulsivity, which are the characteristics of Antisocial PD, with difficulties in emotion regulation in men. Also, due to the fact that men generally use suppression and avoidance methods to cope with the anxiety (Tamres et al., 2002), it can be said that this tendency could be one of the risk factors for Schizoid PD, in relation to the hyperactivation of BIS.

In the relationship between BAS and Borderline BP, it was determined that increase in difficulties in emotion regulation is positively related to an increase in Borderline PD in women. Borderline PD is associated with emotional instability (APA, 2013), due to this fact it can be thought that difficulties in emotion regulation has a close relationship with mood imbalance in women. Also, the increase in impulsive behaviors such as self-harm could be thought to be related to hyperactivation in BAS (Gray & McNaughton, 2000).

In the relationship between OCPD and BAS, an increase in BAS was found to be related to a decrease in OCPD in women, while an increase in OCPD was seen in men. Due to the conflicting findings in the literature about prevalence of OCPD in men and women (Paris, 2004; Vivan et al., 2014), it could be said that different variables may have a role in this relationship. In our study, no correlation was found between BAS and OCPD in women, however, a correlation was determined in men. In addition, it was found that there is statistically significant differentiation between these two correlation values. In this respect, it is seen that difficulties in emotion regulation affect women and men differently in the relationship between BAS and OCPD. This result can be considered an important finding in terms of determining appropriate therapy methods for men and women. In reference to the fact that the moderated mediation analysis were performed on the basis of correlation, it is seen that the results of the comparisons between the correlation values in female and male groups, also provide descriptive information related to these results.

It was determined that gender had a moderating role on the paths between Freeze and Dependent PD, and between DERS-16 and Dependent PD. Specifically, high levels in Freeze and difficulties in emotion regulation may be risk factors for increase in Dependent PD in men. Freeze is a sub-dimension of the FFFS, which is related to fear and is a reaction that occurs when the danger is too close not being able to escape (Pickering & Corr, 2008). In this respect, it can be thought that with the increase in difficulties in emotion regulation in men with a high level of Freeze, the inability to take decisions alone and the need for other's support get higher, which is one of the characteristics of Dependent PD (APA, 2013).

In the relationship between Fight and Dependent PD, it was found that increase in difficulties in emotion regulation is a risk factor for increase in Dependent PD in women. In addition, it was determined that increase in Fight was related to a higher increase in Histrionic PD and also in Narcissistic PD in women. Accordingly, in women, as the difficulties in emotion regulation is determined as a risk factor for the relationship between Fight and Dependent PD; and also for the relationship between Histrionic PD and Narcissistic PD, high-level Fight is found to be a risk factor, too. It can be thought that difficulties in emotion regulation could increase the level of Dependent PD, with the fear of being alone and not receiving support, in women. In addition, it can be said that in Histrionic PD a high level of Fight could lead to more seductive and improper behaviors with fear of not being the centre of attention; and in Narcissistic PD, a high level of Fight could be related to an increase in grandiose behaviors and using others for their own benefit, with the fear of being not approved by others.

Limitations and Future Research

In our study, the personality disorder groups obtained from the subscales of CATI+TR SF, actually indicate a personality trait, and each personality disorder was evaluated dimensionally. Therefore, they should be evaluated diagnosis-independent. However, including clinical samples may provide more descriptive data on the moderated mediation role of emotion regulation and gender. So, not including the clinical sample can be shown as one of the limitations. Also, there are studies that show that psychoeducation programs based on emotion regulation help individuals with Borderline PD to cope with negative emotions (Wojciechowski, 2021). In addition, it is known that these training programs provide increase in usage of the healthy emotion regulation strategies such as reappraisal strategy (Lam et al., 2020). Therefore, experimental studies include psychoeducation programs may provide more clear information about the relationship between reinforcement sensitivity and personality disorders with respect to emotion regulation. In addition, not evaluating masculine and feminine features in our study can be considered another limitation. The increase in some personality disorders in women, especially known to be male-specific, may be related to the increase in masculine features in women in recent years. In this respect, including the examination of masculine and feminine features in future studies is suggested.

In our study, all personality disorders were included and this can be thought one of the strengths of the study. Thus, the effects of emotion regulation on men and women were investigated separately for each personality disorder in their relations with reinforcement sensitivity systems. In addition, the statistical method used for moderated mediation analysis in this study can be shown as another strength of our study. In this way, the analysis of all variables was performed in a single model in which the standard errors in the analysis was minimized.

In conclusion, in our study, it has been shown that emotion regulation and gender have moderated mediation role on different paths in the relationships between reinforcement sensitivity systems and personality disorders. In other words, it was determined that lack of emotion regulation has different effects in the relationships between personality disorders and reinforcement sensitivity systems in men and in women. In this respect, for more

effective and appropriate treatment methods in psychopathology, considering the gender differences is offered.

Declarations

Ethics Approval and Consent to Participate
Ethics committee approval dated 31.12.2021 and numbered 2021/12 was obtained from the Ethics Committee of İstanbul Sabahattin Zaim University for this study. All participants were given consent for their data to be used in the research, and they were informed that they could withdraw at any time.

Consent for Publication
Not applicable

Availability of Data and Materials
Not applicable.

Competing Interests
The author declares that no competing interests in this manuscript.

Funding
Not applicable.

Authors' Contributions
YB carried out the proposal of the main idea of the research, YB contributed to the collection of data, YB and GB performed the analysis and made contributions to interpretation of analysis results. YB and GB contributed to the writing and proofreading of the article. All authors have read and approved the final article.

References

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders. (5th ed.). American Psychiatric Association. https://doi.org/10.1176/appi.books.9780890425596

Arıcı-Özcan, N. (2019). The mediator role of cognitive flexibility and mindfulness in relationship between perceived stress and distress tolerance among university students. European Journal of Education Studies, 6(9), 316-332. https://doi.org/10.5281/zenodo.3596983

Balaban, G., & Bilge, Y. (2021). Study of validity and reliability of the Reinforcement Sensitivity Questionnaire in Turkish community sample. Archives of Neuropsychiatry, 58(3), 234-241. https://doi.org/10.29399/npa.27369

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. Journal of Personality and Social Psychology, 51(6), 1173–1182. https://doi.org/10.1037/0022-3514.51.6.1173

Bilge, Y., & Bilge, Y. (2017). The examination of the relationship between gender and socio-economic level factors with psychological disorders in adolescents in Turkey. Global Journal of Psychology Research: New Trends and Issues, 7, 100-110. https://doi.org/10.18844/gjpr.v7i2.2576

Bilge, Y. (2018). A brief inventory for DSM-5 personality disorders: The development of Coolidge Axis II Inventory Plus Turkish-Short Form. Anatolian Journal of Psychiatry, 9 (Supplement 2), 14-21. http://dx.doi.org/10.5455/apd.302642951

Bilge, Y., & Balaban, G. (2019). The relationships between introvert and extravert personality traits with behavioral inhibition and activation systems: An experimental and psychometric study. Neuropsychiatric Investigation, 57(4), 8-14.

Bjureberg, J., Ljótsson, B., Tull, M.T., Hedman, E., Sahlin, H., Lundh, L.G., Bjärehed, J., DiLillo, D., Messman-Moore, T., Gumpert, C.H., & Gratz, K. L. (2016). Development and validation of a brief version of the difficulties in emotion regulation scale: The DERS-16. Journal of Psychopathology and Behavioral Assessment, 38(2), 284–296. https://doi.org/10.1007/s10862-015-9514-x

Brieger, P., Sommer, S., Blöink, F., & Marneros, A. A. (2000). The relationship between five-factor personality measurements and ICD-10 personality disorder dimensions: results from a sample of 229 subjects. Journal of Personality Disorders, 14(3), 282–290. https://doi.org/10.1521/pedi.2000.14.3.282

Carver, C. S., & White, T. L. (1994). Behavioral inhibition, behavioral activation, and affective responses to impending reward and punishment: The BIS/BAS Scales. Journal of Personality and Social Psychology, 67(2), 319–333. https://doi.org/10.1037/0022-3514.67.2.319

Coolidge, F.L. (2006). The Coolidge Axis II inventory Plus-Revised: Manual. Colorado Springs.

Corbitt, E. M., & Widiger, T. A. (1995). Sex differences among the personality disorders: An exploration of the data. Clinical Psychology: Science and Practice, 2(3), 225–238. https://doi.org/10.1111/j.1468-2850.1995.tb00041.x

Distel, M. A., Rebollo-Mesa, I., Willemsen, G., Derom, C. A., Trull, T. J., Martin, N. G., & Boomsma, D. I. (2009). Familial resemblance of borderline personality disorder features: genetic or cultural transmission?. PloS One, 4(4), e5334. https://doi.org/10.1371/journal.pone.0005334

Erdfelder, E., Faul, F., & Buchner, A. (1996). GPOWER: A general power analysis program. Behavior Reseach Methods, Instruments, & Computers, 28(1), 1–11. https://doi.org/10.3758/BF03203630

Frank, S. J., McLaughlin, A. M., & Crusco, A. (1984). Sex role attributes, symptom distress, and defensive style among college men and women. Journal of Personality and Social Psychology, 47(1), 182–192. https://doi.org/10.1037//0022-3514.47.1.182

Golomb, M., Fava, M., Abraham, M., & Rosenbaum, J. F. (1995). Gender differences in personality disorders. The American Journal of Psychiatry, 152(4), 579–582. https://doi.org/10.1176/ajp.152.4.579

Gray, J.A. (1981). A critique of Eysenck's theory of personality. In H. J. Eysenck (Ed.), A model of personality (pp. 246–276). New York, Springer.

Gray, J.A., & McNaughton, N. (2000). The neuropsychology of anxiety: An enquiry in to the functions of the septo-hippocampal system. (2nd ed.) Oxford University Press.

Gupta, S., & Shukla, A.P. (1989). Verbal operant conditioning as a function of extraversion and reinforcement. British Journal of Psychology, 80(1), 39-44. https://doi.org/10.1111/j.2044-8295.1989.tb02302.x

Hayes, A.F. (2018). Introduction to mediation, moderation, and conditional process analysis: A regression-based approach. Guilford Publications.

Heritage, A.J., Long, L.J., Woodman, G.F., & Zald, D.H. (2018). Personality correlates of individual differences in the recruitment of cognitive mechanisms when rewards are at stake. Psychophysiology, 55(2), e12987. https://doi.org/10.1111/psyp.12987

Jorm, A.F., Christensen, H., Henderson, A.S., Jacomb, P.A., Korten, A.E., & Rodgers, B. (1999). Using the BIS/BAS scales to measure behavioural inhibition and behavioural activation: Factor structure, validity and norms in a large community sample. Personality and Individual Differences, 26(1), 49–58. https://doi.org/10.1016/S0191-8869(98)00143-3

Lam, A.H.Y., Leung, S.F., Lin, J.J., & Chien, W.T. (2020). The Effectiveness of a Mindfulness-Based Psychoeducation Programme for Emotional Regulation in Individuals with Schizophrenia Spectrum Disorders: A Pilot Randomised

Controlled Trial. Neuropsychiatric Disease and Treatment, 16, 729-747. https://doi.org/10.2147/NDT.S231877

Lombardo, M. V., Ashwin, E., Auyeung, B., Chakrabarti, B., Lai, M. C., Taylor, K., Hackett, G., Bullmore, E. T., & Baron-Cohen, S. (2012). Fetal programming effects of testosterone on the reward system and behavioral approach tendencies in humans. Biological Psychiatry, 72(10), 839–847. https://doi.org/10.1016/j.biopsych.2012.05.027

Lopez, C. M., Driscoll, K. A., & Kistner, J. A. (2009). Sex differences and response styles: subtypes of rumination and associations with depressive symptoms. Journal of Clinical Child & Adolescent Psychology, 38(1), 27–35. https://doi.org/10.1080/15374410802575412

Matsunaga, H., Hayashida, K., Kiriike, N., Nagata, T., & Stein, D.J. (2010). Clinical features and treatment characteristics of compulsive hoarding in Japanese patients with obsessive-compulsive disorder. CNS Spectrums, 15(4), 258–265. https://doi.org/10.1017/s1092852900000092

Ouellet, C., Langlois, F., Provencher, M.D., & Gosselin, P. (2019). Intolerance of uncertainty and difficulties in emotion regulation: proposal for an integrative model of generalized anxiety disorder. European Review of Applied Psychology, 69(1), 9–18. https://doi.org/10.1016/j.erap.2019.01.001

Paris, J. (2004). Personality disorders over time: implications for psychotherapy. American Journal of Psychotherapy, 58(4), 420–429. https://doi.org/10.1176/appi.psychotherapy.2004.58.4.420

Pastor, D.A., Barron, K E., Miller, B.J., & Davis, S.L. (2007). A latent profile analysis of college students' achievement goal orientation. Contemporary Educational Psychology, 32(1), 8–47. https://doi.org/10.1016/j.cedpsych.2006.10.003

Pickering, A.D., & Corr, P.J. (2008). J.A. Gray's reinforcement sensitivity theory (RST) of personality. In G. J. Boyle, G. Matthews, D.H. Saklofske (Eds.). The SAGE handbook of personality theory and assessment, Vol. 1. Personality theories and models. (pp. 239–256). Sage Publications, Inc. https://doi.org/10.4135/9781849200462.n11

Schulte Holthausen, B., & Habel, U. (2018). Sex Differences in Personality Disorders. Current Psychiatry Reports, 20(12), 107. https://doi.org/10.1007/s11920-018-0975-y

Schwartz-Mette, R.A., Shankman, J., Dueweke, A.R., Borowski, S., & Rose, A.J. (2020). Relations of friendship experiences with depressive symptoms and loneliness in childhood and adolescence: A meta-analytic review. Psychological Bulletin, 146(8), 664–700. https://doi.org/10.1037/bul0000239

Smederevac, S., Mitrović, D., Čolović, P., & Nikolašević, Ž. (2014). Validation of the measure of revised reinforcement sensitivity theory constructs. Journal of Individual Differences, 35(1), 12–21. https://doi.org/10.1027/1614-0001/a000121

Tamres, L.K., Janicki, D., & Helgeson, V.S. (2002). Sex differences in coping behavior: A meta-analytic review and an examination of relative coping. Personality and Social Psychology Review, 6(1), 2–30. https://doi.org/10.1207/S15327957PSPR0601_1

Vivan, A., Rodrigues, L., Wendt, G., Bicca, M.G., Braga, D.T., & Cordioli, A.V. (2014). Obsessive-compulsive symptoms and obsessive-compulsive disorder in adolescents: a population-based study. Revista Brasileire de Psiquiatria, 36(2), 111–118. https://doi.org/10.1590/1516-4446-2013-1113

Wilson, N., Robb, E., Gajwani, R., & Minnis, H. (2021). Nature and nurture? A review of the literature on childhood maltreatment and genetic factors in the pathogenesis of borderline personality disorder. Journal of Psychiatric Research, 137, 131–146. https://doi.org/10.1016/j.jpsychires.2020.12.025

Wojciechowski, T. (2021). The dual mediating roles of impulsivity and emotion regulation of the borderline personality disorder-violence relationship: A structural equation modeling approach. Journal of Forensic Science, 66(6), 2329-2339. https://doi.org/10.1111/1556-4029.14807

Yiğit, İ., & Guzey Yiğit, M. (2019). Psychometric Properties of Turkish Version of Difficulties in Emotion Regulation Scale-Brief Form (DERS-16). Current Psychology, 38(6), 1503–1511. https://doi.org/10.1007/s12144-017-9712-7.