

An Examination of the Relationship Between Early Maladaptive Schemas and Psychological Symptoms

Erken Dönem Uyumsuz Şemalar ile Psikolojik Semptomlar Arasındaki İlişkinin İncelenmesi

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Abstract

Early maladaptive schemas (EMSs), within the framework of the Schema Therapy Model, are considered key vulnerability factors associated with psychological symptoms and their impact on well-being. But, in the literature, the role of these factors in the development of depression, anxiety, and stress symptoms is generally examined separately. This study aims to evaluate the predictive power of demographic variables and EMSs on these symptoms in an integrative manner in a non-clinical sample. A cross-sectional descriptive study used convenience sampling to gather data from 366 participants. Measures included the Demographic Information Form, the Young Schema Questionnaire-Short Form 3, and the Depression Anxiety Stress Scale. Pearson correlation and hierarchical regression analyses were conducted. The results showed that disconnection and rejection and other-directedness schema domains predicted depression symptoms; disconnection and rejection and impaired autonomy schema domains predicted anxiety symptoms; and disconnection and rejection schema domain predicted stress symptoms. These results suggest that specific EMSs and demographic factors differentially contribute to psychological symptoms, underscoring the relevance of schema domains assessment in mental health interventions. Clinical implications and suggestions for future research are also discussed in the study.

Keywords: Early maladaptive schemas, depression, anxiety, stress

Öz

Şema Terapi Modeli'ne göre, erken dönem uyumsuz şemalar, iyi oluşla ilişkili olarak psikolojik semptomların gelişiminde temel kırılabilirlik faktörleri olarak kabul edilmektedir. Ancak alanyazında, genellikle bu faktörlerin depresyon, anksiyete ve stres semptomlarının gelişimindeki rolünün ayrı ayrı ele alındığı görülmektedir. Mevcut çalışma, klinik olmayan bir örnekleme demografik değişkenler ile erken dönem uyumsuz şemaların bu semptomlar üzerindeki yordama gücünü bütüncül biçimde değerlendirmeyi amaçlamaktadır. Kesitsel ve tanımlayıcı araştırma desenine sahip bu çalışmada, kolayda örnekleme yöntemiyle 366 katılımcıdan veri toplanmıştır. Veri toplama araçları arasında Demografik Bilgi Formu, Young Şema Anketi Kısa Form-3 ve Depresyon Anksiyete Stres Ölçeği yer almaktadır. Değişkenler arasındaki ilişkileri ve yordayıcı rolleri incelemek amacıyla Pearson korelasyon ve hiyerarşik regresyon analizleri uygulanmıştır. Bulgular, kopukluk ve reddedilme ile diğer-yönelimlilik şema alanlarının depresyon semptomlarını; kopukluk ve reddedilme ile zedelenmiş özerklik şema alanlarının anksiyete semptomlarını; kopukluk ve reddedilme şema alanının ise stres semptomlarını anlamlı biçimde yordadığını göstermiştir. Elde edilen bulgular, erken dönem uyumsuz şemaların farklı psikolojik semptomlar üzerindeki özgün katkılarını ortaya koymakta ve iyi oluşun desteklenmesine yönelik müdahale tasarımlarında şema alanlarının değerlendirilmesinin önemini vurgulamaktadır. Ayrıca, çalışmada klinik çıkarımlar ve gelecekteki araştırmalara yönelik öneriler de tartışılmıştır.

Anahtar Kelimeler: Erken dönem uyumsuz şemalar, depresyon, anksiyete, stres

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Introduction

According to the World Health Organization (2021), maintaining individuals' overall well-being is closely related to the health of their psychological state. However, psychological symptoms have been associated with poorer social and occupational functioning, which may be linked to declines in general well-being (Scott & Crino, 2014). In the literature, early maladaptive schemas (EMSs) have been associated with an increased vulnerability to various psychological challenges, including somatization disorder and social anxiety, which could be linked to reduced overall well-being (Calvete et al., 2015; Maher et al., 2022; Miklósi et al., 2016). Indeed, studies have shown that EMSs can explain approximately 31% to 47.2% of the variance observed in psychological symptoms (Costa et al., 2020; Yıldız, 2017). These findings suggest that EMSs may be associated with individuals' well-being.

Based on the Schema Therapy Model, developed within the framework of Cognitive Behavioral Theory, the insufficient fulfillment of an individual's childhood needs and the interaction of child temperament with parenting styles may contribute to the formation of mental patterns that reflect beliefs about oneself and the environment (Gör et al., 2017; Kömürcü & Pekak, 2017; Young et al., 2003). These mental patterns, termed schemas, are thought to be related to individuals' self-perception and worldview (Kömürcü & Pekak, 2017; Rafaeli et al., 2010). Schemas formed through past experiences may be activated in adulthood when similar conditions arise, influencing an individual's cognitive, emotional, bodily, and memorial experiences, and potentially leading to social life and relationship difficulties (Costa et al., 2020; Özbaş et al., 2012). Moreover, it is suggested that this condition may be associated with the emergence of psychological symptoms and a decrease in functionality (Gültekin & Akyunus, 2022; Kömürcü & Pekak, 2017).

Schemas fundamentally encompass 18 specific schemas grouped into five domains (Rafaeli et al., 2010). Within this framework, disconnection and rejection schemas are linked to feelings of insecurity and inferiority, stemming from the belief that emotional needs will not be met; impaired autonomy schemas are associated with feelings of vulnerability due to a lack of support for individuation; unrelenting standards schemas, influenced by rigid attitudes, are related to restricting happiness to adherence to rules; other-directedness schemas, including subjugation, have been related to the tendency of individuals to neglect their own needs in pursuit of approval; and impaired limits schemas have been associated with difficulties in impulse control and cooperation (Kömürcü & Gör, 2016; Young et al., 2003). In literature, it is suggested that psychologically maladaptive and rigid schema structures are linked to various psychological symptoms, with these schemas being more prominent among clinical populations (Arıcı et al., 2021; Cámara & Calvete, 2012; Kapçı & Hamamcı, 2010).

EMSs have been associated with various psychological symptoms (Costa et al., 2020; Maher et al., 2022). Among these is also depression, characterized by symptoms such as loss of interest, hopelessness, helplessness, feelings of inadequacy, perception of worthlessness, and low energy (American Psychiatric Association [APA], 2013). Various studies have revealed that EMSs show a significant relationship with depressive symptoms (Kırkıkoğlu & Koç, 2019; Martin et al., 2018). In this context, cognitive distortions linked to dysfunctional schemas in depressed individuals may be related to negative information processing and a pessimistic evaluation of oneself, one's experiences, and the future (Arı, 2021). Meta-analytic studies emphasize that the disconnection and rejection schema domain is most consistently associated with depressive symptoms (Tariq et al., 2021). Additionally, the impaired autonomy schema domain has also been reported to be associated with depressive symptoms (Cámara & Calvete, 2012). Moreover, some studies have reported that the schema domains of disconnection and rejection, impaired autonomy, and other-directedness are positively and moderately correlated with depressive symptoms (Tariq et al., 2021). Furthermore, impaired autonomy, disconnection and rejection, impaired limits, and other-directedness schema domains have also been reported to be associated with depressive symptoms (Calvete et al., 2015; Halvorsen et al., 2009), and it has been suggested that these relationships may differ according to gender (Cámara & Calvete, 2012).

Anxiety is defined as an emotional state characterized by persistent unease and a sense of impending misfortune experienced by an individual in the absence of a distinct threat (APA, 2013; Tariq et al., 2021). Furthermore, when examining the associations of anxiety symptoms, it has been reported that individuals experience cognitive biases when evaluating stimuli, which may be related to avoidant behaviors in social interactions and, consequently, difficulties in adaptation (Clark & McManus, 2002). In this context, considering the cognitive and behavioral processes associated with anxiety symptoms, the connection between EMSs and anxiety symptoms has been addressed as a significant topic in research. Indeed, studies have

demonstrated significant associations between EMSs and anxiety symptoms (Kırkikoğlu & Koç, 2019; Scott & Crino, 2014). Additionally, studies examining different schema domains have found that impaired autonomy, disconnection and rejection, and other-directedness schema domains, in particular, have been reported to be associated with anxiety symptoms (Cámara & Calvete, 2012; Cui et al., 2011; Tariq et al., 2021).

The number of studies focusing on the relationship between EMSs and stress symptoms has steadily increased in the literature. Unlike anxiety, stress is generally derived from external factors and is defined as a condition that challenges an individual's ability to adapt (Rathi et al., 2019; Tariq et al., 2021). Studies have reported associations between EMSs and stress symptoms (Scott & Crino, 2014) and suggested that stress may mediate the relationship between EMSs and well-being (Miklósi et al., 2016). Moreover, impaired autonomy, impaired limits, and disconnection and rejection schema domains have been reported to show positive associations with stress symptoms, with some evidence suggesting gender-based differences, and the disconnection and rejection schema domain has been linked explicitly to stress symptoms (Calvete et al., 2013). While some studies have reported that all EMSs positively correlate with stress (Cudo et al., 2023), others have found significant positive correlations only for disconnection and rejection schemas (Rhzali et al., 2023). Finally, longitudinal studies have revealed that the schema of disconnection and rejection is associated with and predicts stress (Alba & Calvete, 2019).

When the above findings are evaluated, it is seen that studies addressing the relationship between EMS and symptoms of depression, anxiety, and stress are present in the literature (Calvete et al., 2013; Halvorsen et al., 2009; Kırkikoğlu & Koç, 2019; Miklósi et al., 2016; Rhzali et al., 2023; Tariq et al., 2021). However, the scarcity of studies addressing depression, anxiety, and stress symptoms together suggests a need for a more comprehensive perspective in this area (Alba & Calvete, 2019; Hatoum et al., 2024; Scott & Crino, 2014). Considering these limitations, this study aims to comprehensively examine the relationships between EMS and depression, anxiety, and stress symptoms in a non-clinical population, taking demographic characteristics into account.

Material and Methods

Methods

Participant

Using the G*Power software, the required sample size was determined to enhance the reliability and statistical power of the results (Faul et al., 2009; In et al., 2020; Kang, 2021). A medium effect size ($f^2 = .15$) and a power level of .80 were selected for multiple regression analysis to determine the adequate sample size (Kang, 2021; Serdar et al., 2021). The calculations indicated a minimum sample size of 153 participants; however, a larger sample was targeted to mitigate the risk of data loss. This study employed a cross-sectional and descriptive design, and participants were recruited through convenience sampling. Initially, data were collected from a broader pool of participants. However, seven questionnaires were completed in less than five minutes, three with identical responses throughout, and thirteen with outlier values were excluded from the analysis due to concerns about data quality. Consequently, the final valid sample comprised 366 participants. Participants ranged in age from 18 to 58 years ($M = 25.37$, $SD = 8.26$), with 274 females (74.9%) and 92 males (25.1%). Regarding educational background, 42 (11.5%) participants had completed high school, 58 (15.8%) held an associate degree, 240 (65.6%) a bachelor's degree, 19 (5.2%) a master's degree, and 7 (1.9%) a doctorate. In terms of income level, 102 participants (27.9%) described themselves as having a low income, 198 (54.1%) reported a middle income, and 66 (18.0%) indicated a high income.

Measures

Demographic Information Form: The form included demographic details and criteria for participation.

Young Schema Questionnaire-Short Form-3: This scale, developed by Young (1994) to assess EMSs, was adapted to Turkish (Soygüt et al., 2009). It is a self-report measure of 90 items rated on a 6-point Likert-type scale (1-Completely untrue of me, 6-Describes me perfectly). The scale comprises five sub-dimensions: disconnection and rejection ($n = 23$), unrelenting standards ($n = 9$), impaired autonomy ($n = 29$), impaired limits ($n = 18$), and other-directedness ($n = 11$). This scale includes items such as "I am maladaptive." Higher scores obtained from the sub-dimensions indicate higher levels of EMSs. In the Turkish adaptation, Cronbach's alpha coefficients for the schema domains ranged from .53 to .81 (Soygüt et al., 2009); in the

present study, they were .92, .79, .90, .71, and .79 for disconnection and rejection, unrelenting standards, impaired autonomy, impaired limits, and other-directedness, respectively.

Depression Anxiety Stress Scale-21: This scale, developed by Lovibond and Lovibond (1995) to assess psychological symptoms of depression, anxiety, and stress, was adapted into Turkish (Sarıçam, 2018). It is a self-report measure comprising 21 items rated on a 4-point Likert-type scale (0-Never, 3-Always). The scale comprises three sub-dimensions: depression ($n = 7$), anxiety ($n = 7$), and stress ($n = 7$). This scale includes items such as "I felt that I was worth nothing as a person." Higher scores obtained from the sub-dimensions indicate higher psychological symptoms. In the original study, Cronbach's alpha coefficients for the depression, anxiety, and stress subscales were reported as .94, .87, and .91, respectively (Antony et al., 1998); in the present study, they were found to be .86, .87, and .80, respectively. This study utilized the original subscale scores of all analyses (0–21), emphasizing the examination of correlations and regressions rather than classifying severity.

Procedure

Ethical approval was obtained from the Bartın University Social and Human Sciences Research Ethics Committee (Decision No. 2024-SBB-0703, Date: May 30, 2024). Before participation, participants were presented with an informed consent form. To control for variables that could influence participant responses, the inclusion criteria specified that participants must be without systemic or psychiatric disorders, not undergoing any psychological or psychiatric treatment, and not taking psychiatric medications, psychoactive substances, or sleep aids (Stanković et al., 2021). All participants were required to be at least 18 years of age.

Data were collected online via Microsoft 365 Office Forms under the supervision of the researchers between May and July 2024. The administration took approximately 30 minutes, and the system was configured to prevent incomplete or duplicate submissions. Forms completed in less than five minutes or containing identical responses were excluded from the analysis due to concerns about data quality. Only valid and reliable data were included in the study, and all participant information was anonymized to ensure confidentiality.

Data analysis

Before analysis, normality assumptions were evaluated based on skewness and kurtosis values within acceptable ranges (± 1.5 ; Tabachnick & Fidell, 2013). To further ensure the robustness of the regression models, potential outliers were examined using Mahalanobis distance (χ^2 , $df = 7$, $p < .001$; cutoff = 24.322) and Cook's Distance (cutoff = 1.0). Moreover, assumptions of regression (e.g., absence of multicollinearity) were tested before analysis (Denis, 2018; Jeong & Jung, 2016). Subsequently, Pearson correlation analysis was used to examine the direction and strength of associations among variables, followed by hierarchical regression analysis to evaluate the predictive roles of demographic variables and EMSs on psychological symptoms. The significance level was set at $p < .05$ (Tabachnick & Fidell, 2013), and all statistical analyses were conducted using IBM SPSS Statistics 28.

Results

Descriptive Statistical Analysis and Correlations Between Variables

Normality assumptions were tested using skewness and kurtosis values within acceptable ranges (Tabachnick & Fidell, 2013). In addition, multivariate outlier diagnostics were conducted using Mahalanobis distance, identifying 13 cases that exceeded the threshold and did not meet normality assumptions (Denis, 2018; Jeong & Jung, 2016); these cases were excluded from the analysis. Although some Mahalanobis values remained marginally above the reference value after exclusion, Cook's Distance values for all cases were well below the conventional cutoff of 1.0, indicating that no observation exerted undue influence on the regression estimates (Jeong & Jung, 2016; Tabachnick & Fidell, 2013). Therefore, no additional cases were removed. Sensitivity analyses, which included the excluded cases, verified that the results were consistent with the findings presented. Based on the Pearson correlation analysis, depression, anxiety, and stress were positively correlated with all EMS domains and negatively correlated with age ($p < .01$). Descriptive statistics and correlations among the variables are presented in Table 1.

Table 1.
Descriptive Statistics and Relationships between Variables

Variable	Mean ± SD	Skewness	Kurtosis	1	2	3	4	5	6	7	8	9
1. Unrelenting Standards	29.33±8.14	.060	-.009	1								
2. Impaired Autonomy	69.01±23.71	.450	-.284	.52**	1							
3. Disconnection and Rejection	56.25±19.59	.509	-.290	.39**	.81**	1						
4. Impaired Limits	23.95±6.74	.002	-.158	.56**	.46**	.46**	1					
5. Other-Directedness	36.38±9.38	-.178	-.117	.59**	.60**	.56**	.49**	1				
6. Depression	6.90±4.60	.718	.319	.29**	.57**	.66**	.39**	.42**	1			
7. Anxiety	5.99±4.49	.840	.437	.28**	.57**	.51**	.30**	.33**	.69**	1		
8. Stress	7.77±4.23	.508	.071	.39**	.50**	.50**	.39**	.41**	.74**	.73**	1	
9. Gender ^a	.25 ±.43	-	-	.01	-.08	.08	.03	.07	-.04	-.10	-.02	1
10. Age	25.37±8.26	-	-	-.04	-.15**	-.11*	-.14**	.10	-.20**	-.24**	-.15**	.06

Note. SD = Standard deviation; ^a Gender coded as 0 = Female and 1 = Male; * $p < .05$; ** $p < .01$; *** $p < .001$.

Results of Hierarchical Regression Analysis

Three separate hierarchical regression analyses were conducted to evaluate the predictive power of demographic variables (age and gender) and EMSs on psychological symptoms. The suitability of regression assumptions was assessed to ensure that the analyses produced valid results (Denis, 2018; Jeong & Jung, 2016). In this context, Durbin–Watson coefficients and variance inflation factors (VIF) were evaluated and reported in the regression analyses. Additionally, standardized regression coefficients (β), 95% confidence intervals (CI), adjusted R^2 for each model, Part (semi-partial correlations), and sr^2 (squared semi-partial correlations) were reported.

Initially, the predictive power of demographic characteristics and EMSs on depression symptoms was examined. The regression analysis assumptions were reviewed, and the Durbin-Watson coefficient was determined to be 1.575. The findings of the hierarchical regression analysis demonstrated that age negatively predicted depression symptoms in the first step of the model ($\beta = -.20$, $p < .001$, $sr^2 = .04$), and the model was significant ($F(2, 363) = 7.504$, $p = .001$). In the second step, the model between EMSs and depression symptoms was also found to be significant ($\Delta R^2 = 43.1\%$, $F(7, 358) = 45.397$, $p < .001$). Accordingly, age ($\beta = -.13$, $p < .001$, $sr^2 = .02$) and gender ($\beta = -.08$, $p < .05$, $sr^2 = .01$) negatively predicted depression symptoms, while the disconnection and rejection ($\beta = .55$, $p < .001$, $sr^2 = .09$) and other-directedness ($\beta = .12$, $p < .05$, $sr^2 = .01$) schema domains positively predicted depression symptoms. The remaining schema domains did not make unique significant contributions ($sr^2 < .01$). The findings obtained from the hierarchical regression analysis for depression symptoms are presented in Table 2.

Table 2.**Hierarchical Regression Analysis Findings on the Predictive Power of Demographic Characteristics and EMSs on Depression**

Models	Depression										
	R^2	Adjusted R^2	ΔR^2	F	β	p	95% CI for β		Part	sr^2	VIF
							LL	UL			
Model 1	.040	.034	.040	7.504							
Age					-.20	< .001***	-.17	-.05	-.20	.04	1.004
Gender ^a					-.03	.62	-1.35	.80	-.03	.00	1.004
Model 2	.470	.460	.431	45.397							
Age					-.13	< .001***	-.12	-.03	-.13	.02	1.116
Gender ^a					-.08	.045*	-1.70	-.02	-.08	.01	1.093
Unrelenting Standards					-.07	.20	-.10	.02	-.05	.00	1.932
Impaired Autonomy					.03	.72	-.02	.03	.01	.00	3.829
Disconnection and Rejection					.55	< .001***	.10	.16	.30	.09	3.341
Impaired Limits					.08	.09	-.10	.12	.07	.00	1.681
Other-Directedness					.12	.03*	.01	.11	.08	.01	2.135

Note. β = Standardized regression coefficients; CI = Confidence Interval; LL = Lower Limit; UL = Upper Limit; Part = Semi-partial correlations; sr^2 = Squared semi-partial correlations; VIF = Variance Inflation Factor; ^a Gender coded as 0 = Female and 1 = Male; * p < .05; ** p < .01; *** p < .001.

Secondly, the predictive power of demographic characteristics and EMSs on anxiety symptoms was examined. The regression analysis assumptions were reviewed, and the Durbin-Watson coefficient was determined to be 1.894. The findings of the hierarchical regression analysis demonstrated that age negatively predicted anxiety symptoms in the first step of the model ($\beta = -.23$, $p < .001$, $sr^2 = .05$), and the model was significant ($F(2, 363) = 12.161$, $p < .001$). In the second step, the model between EMSs and anxiety symptoms was also found to be significant ($\Delta R^2 = 29.6\%$, $F(7, 358) = 28.566$, $p < .001$). Accordingly, age ($\beta = -.15$, $p < .01$, $sr^2 = .02$) negatively predicted anxiety symptoms, while the impaired autonomy ($\beta = .38$, $p < .001$, $sr^2 = .04$) and disconnection and rejection ($\beta = .19$, $p < .05$, $sr^2 = .01$) schema domains positively predicted anxiety symptoms. The remaining schema domains did not make unique contributions ($sr^2 < .01$). The findings obtained from the hierarchical regression analysis for anxiety symptoms are presented in Table 3.

Table 3.**Hierarchical Regression Analysis Findings on the Predictive Power of Demographic Characteristics and EMSs on Anxiety**

Models	Anxiety										
	R^2	Adjusted R^2	ΔR^2	F	β	p	95% CI for β		Part	sr^2	VIF
							LL	UL			
Model 1	.063	.058	.063	12.161							
Age					-.23	< .001***	-.18	-.07	-.23	.05	1.004
Gender ^a					-.08	.10	-1.90	.17	-.08	.01	1.004
Model 2	.358	.346	.296	28.566							
Age					-.15	< .001***	-.13	-.04	-.15	.02	1.116
Gender ^a					-.07	.10	-1.66	.15	-.07	.00	1.093
Unrelenting Standards					-.02	.78	-.07	.06	-.01	.00	1.932
Impaired Autonomy					.38	< .001***	.04	.10	.19	.04	3.829
Disconnection and Rejection					.19	.02*	.01	.08	.10	.01	3.341
Impaired Limits					.03	.62	-.05	.09	.02	.00	1.681
Other-Directedness					.01	.83	-.05	.07	.01	.00	2.135

Note. β = Standardized regression coefficients; CI = Confidence Interval; LL = Lower Limit; UL = Upper Limit; Part = Semi-partial correlations; sr^2 = Squared semi-partial correlations; VIF = Variance Inflation Factor; ^a Gender coded as 0 = Female and 1 = Male; * p < .05; ** p < .01; *** p < .001.

Thirdly, the predictive power of demographic characteristics and EMSs on stress symptoms was examined. The regression analysis assumptions were reviewed, and the Durbin-Watson coefficient was determined to be 1.778. The findings of the hierarchical regression analysis demonstrated that age negatively predicted stress symptoms in the first step of the model ($\beta = -.15$, $p < .001$, $sr^2 = .02$), and the model was significant ($F(2, 363) = 4.425$, $p = .013$). In the second step, the model between EMSs and stress symptoms was also found to be significant ($\Delta R^2 = 29.6\%$, $F(7, 358) = 24.00$, $p < .001$). Accordingly, age negatively predicted stress symptoms ($\beta = -.10$, $p < .05$, $sr^2 = .01$), while the disconnection and rejection schema domain

positively predicted stress symptoms ($\beta = .25$, $p < .05$, $sr^2 = .02$). The remaining schema domains did not make unique contributions ($sr^2 < .01$). The findings obtained from the hierarchical regression analysis for stress symptoms are presented in Table 4.

Table 4.

Hierarchical Regression Analysis Findings on the Predictive Power of Demographic Characteristics and EMSs on Stress

Models	Stress										
	R^2	Adjusted R^2	ΔR^2	F	β	p	95% CI for β		Part	sr^2	VIF
							LL	UL			
Model 1	.024	.018	.024	4.425							
Age					-.15	.003**	-.13	-.03	-.15	.02	1.004
Gender ^a					-.01	.89	-1.07	.93	-.01	.00	1.004
Model 2	.319	.306	.296	24.000							
Age					-.10	.03*	-.10	-.01	-.10	.01	1.116
Gender ^a					-.03	.50	-1.17	.57	-.03	.00	1.093
Unrelenting Standards					.11	.07	-.01	.12	.08	.01	1.932
Impaired Autonomy					.12	.15	-.01	.05	.06	.02	3.829
Disconnection and Rejection					.25	.002**	.02	.09	.14	.02	3.341
Impaired Limits					.09	.11	-.01	.13	.07	.00	1.681
Other-Directedness					.10	.11	-.01	.10	.07	.00	2.135

Note. β = Standardized regression coefficients; *CI* = Confidence Interval; *LL* = Lower Limit; *UL* = Upper Limit; *Part* = Semi-partial correlations; sr^2 = Squared semi-partial correlations; *VIF* = Variance Inflation Factor; ^a Gender coded as 0 = Female and 1 = Male; * $p < .05$; ** $p < .01$; *** $p < .001$.

Discussion

The current research results indicate that demographic factors and EMSs significantly predict psychological symptoms in a non-clinical population. Accordingly, the disconnection and rejection and other-directedness schema domains positively predicted depression symptoms; disconnection and rejection and impaired autonomy schema domains predicted anxiety symptoms; and disconnection and rejection schema domain predicted stress symptoms. These results, consistent with previous studies (Alba & Calvete, 2019; Calvete et al., 2013; Cámara & Calvete, 2012; Cui et al., 2011; Kirkikoğlu & Koç, 2019; Miklósi et al., 2016; Rhzali et al., 2023; Scott & Crino, 2014), suggest that both demographic and cognitive-emotional factors may serve as vulnerability factors for psychological symptoms. The current study extends the existing literature by showing how specific schema domains are linked to depression, anxiety, and stress symptoms. These results underline the importance of addressing EMSs in psychological assessment and intervention efforts. In particular, understanding the differential roles of these factors may contribute to expanding the theoretical framework, minimizing the potential impact of sample-specific differences observed in isolated studies, and supporting the development of more effective psychological interventions.

In the literature, it has been reported that disconnection and rejection, impaired autonomy, and other-directedness schema domains exhibit positive correlations with depression symptoms; all EMSs exhibit positive correlations with anxiety symptoms; and impaired autonomy, impaired limits, and disconnection and rejection schema domains exhibit positive correlations with stress symptoms (Cudo et al., 2023; Kirkikoğlu & Koç, 2019; Miklósi et al., 2016; Scott & Crino, 2014; Tariq et al., 2021). Consistent with the literature, the current study found that all EMSs positively correlated with these psychological symptoms. These results suggest that EMSs may play a role in the emergence and maintenance of such symptoms.

Previous research suggests that EMSs may contribute to the development of depressive symptoms (Kirkikoğlu & Koç, 2019; Martin et al., 2018). Specifically, disconnection and rejection (Tariq et al., 2021), impaired autonomy (Cámara & Calvete, 2012), impaired limits, and other-directedness schema domains have been linked to higher depression levels (Calvete et al., 2015; Halvorsen et al., 2009). Consistent with these results, the present study indicates that the disconnection and rejection schema domain may heighten depressive symptoms by reinforcing feelings of helplessness and worthlessness in close relationships (Kapçı & Hamamcı, 2010; Tariq et al., 2021). This schema might reinforce beliefs about unmet emotional needs, which could increase feelings of loneliness and inadequacy (Young et al., 2003). Additionally, the results highlight the role of

the other-directedness schema domain, which reflects a tendency to neglect one's own needs in favor of others, in increasing vulnerability to depression (Calvete et al., 2015; Martin & Young, 2010). However, the relatively small effect size of this schema ($\beta = .121, p < .05, sr^2 = .01$) compared to the stronger effect of disconnection and rejection ($\beta = .548, p < .001, sr^2 = .09$) may indicate the involvement of differing mechanisms of influence. Overall, the results underscore the importance of addressing these schema domains in interventions to reduce depressive symptoms.

Several studies have identified positive associations between anxiety symptoms and the schema domains of impaired autonomy, disconnection and rejection, and other-directedness (Cámara & Calvete, 2012; Cui et al., 2011; Sarıtaş Atalar & Gençöz, 2015). Consistent with these results, the current study indicates that disconnection and rejection schemas may contribute to the development of anxiety symptoms by fostering a persistent perception of threat, mainly through assumptions of abandonment or rejection in close relationships (Cámara & Calvete, 2012; Clark & McManus, 2002; Tariq et al., 2021). This schema may lead individuals to believe that their emotional needs will remain unmet, resulting in hypervigilance and avoidance of social interactions. Such patterns may deplete mental resources and increase anxiety levels. Additionally, the impaired autonomy schema, reflecting difficulties in developing independence and self-efficacy, was found to have a stronger predictive effect on anxiety symptoms (Kapçı & Hamamcı, 2010; Sarıtaş Atalar & Gençöz, 2015; Tariq et al., 2021). This schema may heighten feelings of distrust, loss of control, and vulnerability, thereby reinforcing anxiety symptoms. Notably, the impaired autonomy schema demonstrated a more substantial effect ($\beta = .38, p < .001, sr^2 = .04$) compared to the disconnection and rejection schema ($\beta = .19, p < .05, sr^2 = .01$), suggesting that anxiety symptoms may be more closely linked to perceptions of self-efficacy and autonomy. These results underscore the importance of addressing both interpersonal schemas and autonomy-related cognitions in interventions aimed at reducing anxiety symptoms.

Consistent with many studies examining the relationship between EMSs and stress symptoms (Alba & Calvete, 2019; Rhzali et al., 2023; Scott & Crino, 2014), the present results suggest that stress symptoms may be primarily linked to the schema domain of disconnection and rejection. Consistent with previous studies (Alba & Calvete, 2019; Calvete et al., 2013), this schema domain appears to increase stress symptoms by reinforcing beliefs that one's emotional needs (e.g., love, protection) will remain unmet. Such beliefs may also intensify feelings of loneliness and inadequacy, weakening individuals' capacity to cope with stress (Miklósi et al., 2016; Scott & Crino, 2014). Furthermore, a perceived lack of social support may contribute to decreased psychological flexibility, leading to heightened stress symptoms such as intolerance and negative affect. These results underline the potential importance of interventions that aim to reduce threat perceptions, foster emotional security, and enhance social support in individuals with heightened vulnerability in the disconnection and rejection schema domain.

Current results indicate that the effects of schema domains on depression, anxiety, and stress symptoms differ across outcomes. In the context of depression, the disconnection and rejection schema domain emerged as the strongest independent predictor, consistent with previous evidence linking this domain to heightened depressive symptoms (Tariq et al., 2021), while the other-directedness schema provided a more small but significant contribution, in line with earlier results on emotional exhaustion and vulnerability (Calvete et al., 2015; Halvorsen et al., 2009). In contrast, impaired autonomy and unrelenting standards, although correlated with depressive symptoms at the bivariate level, lost significance or even reversed direction in the regression models, a pattern likely attributable to high intercorrelations and possible suppressor effects (Denis, 2018; Jeong & Jung, 2016). For anxiety symptoms, impaired autonomy emerged as the strongest independent predictor, while disconnection and rejection made a secondary contribution, supporting prior evidence that autonomy difficulties are strongly tied to heightened anxiety symptoms (Cámara & Calvete, 2012; Cui et al., 2011; Tariq et al., 2021); however, other schema domains that showed significant bivariate correlations did not remain significant in the regression models, again consistent with overlapping variance and possible suppressor effects. In the case of stress symptoms, only disconnection and rejection retained a significant independent effect, consistent with longitudinal evidence of their predictive role (Alba & Calvete, 2019). However, impaired autonomy and unrelenting standards, despite showing bivariate associations, lost significance when overlapping variance and possible suppressor effects were considered. As indicated by squared semi-partial correlations reflecting small unique effects, these results underscore the importance of considering both shared and unique contributions of schema domains when interpreting their associations with psychological symptoms.

There are inconsistent results in the literature regarding the associations between demographic characteristics and psychological symptoms (Aboalshamat et al., 2017; Tariq et al., 2021). For instance, age has been identified as both a protective (Asıcı & Sari, 2022) and a risk factor (Mahmoud et al., 2012), while gender has been associated with variations in

depression, anxiety, and stress symptoms (Cavanagh et al., 2016; Gao et al., 2020). In line with these inconsistencies, the present study found that gender significantly predicted depression symptoms, and age predicted depression, anxiety, and stress symptoms. However, an exclusive focus on demographic factors such as age and gender may provide a limited understanding of psychological symptoms (Lengua & Stormshak, 2000). Research has further emphasized the importance of psychosocial factors (e.g., gender roles) in shaping psychological outcomes (Arcand et al., 2023). These results suggest that demographic variables should be interpreted with contextual and psychosocial factors. Accordingly, future studies should adopt broader models to better understand the complex interplay between demographic characteristics and psychological symptoms in non-clinical populations.

Several limitations should be acknowledged when interpreting the results of this study. First, the cross-sectional design restricts the ability to infer causal relationships. Additionally, although there are various clinical and comparative studies in the literature on psychological symptoms (Cámara & Calvete, 2012; Halvorsen et al., 2009; Hawke & Provencher, 2011; Pinto-Gouveia et al., 2006; Young et al., 2003), the absence of clinical assessment in the present study limits the generalizability of the results. The reliance on self-report measures and a convenience sampling method further increases the risk of selection bias and potential confounding variables. Moreover, demographic factors such as age and gender, which have been associated with psychological symptoms (Aboalshamat et al., 2017; Arcand et al., 2023; Asici & Sari, 2022; Mahmoud et al., 2012), may have influenced the results. Although several schema domains showed significant bivariate associations with depression symptoms, anxiety symptoms, and stress symptoms, their effects diminished or even reversed in the multivariate models. This pattern may reflect high intercorrelations and possible suppressor effects among schema domains, which limit the precision of interpreting unique contributions (Denis, 2018; Jeong & Jung, 2016). Cultural factors that shape EMSs (Moghaddam & Jomehri, 2016) should also be considered when interpreting the results. Given these limitations, the results should be interpreted with caution, and future research should address these methodological constraints to enhance the validity and generalizability of the results.

Despite its limitations, this study makes a significant contribution to the literature in two key ways. First, it advances the theoretical understanding of psychological symptoms by highlighting the role of EMSs, consistent with previous research (Cámara & Calvete, 2012; Halvorsen et al., 2009). Second, the results have practical implications, as they identify specific schema domains associated with psychological symptoms, which may inform intervention strategies. Clarifying the relationship between EMSs and psychological symptoms can guide the development of preventive and therapeutic approaches. Moreover, building on prior studies (Tariq et al., 2021), the results suggest that interventions targeting maladaptive schemas may be effective in reducing psychological symptoms.

Conclusions and Recommendations

Previous research has shown that EMSs are associated with depression, anxiety, and stress symptoms (Hatoum et al., 2024). In line with these results, the current study demonstrated that the predictive power of specific schema domains differs across psychological symptoms. The disconnection and rejection schema domain showed the strongest association with depression symptoms, while its associations with anxiety and stress symptoms were weaker. These results suggest that this schema domain may mainly contribute to depression by reinforcing beliefs about emotional deprivation and fostering feelings of worthlessness and loneliness. In contrast, its association with anxiety symptoms and stress symptoms appears to be less direct, possibly reflecting the influence of different cognitive mechanisms. For instance, anxiety symptoms are often linked to threat perception and loss of control, whereas stress symptoms are shaped by social support and coping flexibility. Accordingly, these results highlight the critical role of the disconnection and rejection schema in depressive symptoms while indicating a more limited impact on anxiety and stress symptoms. Addressing this schema domain in interventions may, therefore, be particularly beneficial in reducing depression symptoms.

Additionally, the results revealed that the other-directedness schema domain significantly predicted depression symptoms, while the impaired autonomy schema domain was associated with stress symptoms. Neglecting one's own needs in favor of others' expectations, characteristic of the other-directedness schema, may weaken self-worth and contribute to depressive symptoms through increased emotional exhaustion and helplessness. Similarly, individuals with a strong impaired autonomy schema may experience greater vulnerability to stress due to feelings of inadequacy and loss of control. Limited coping strategies and heightened threat perception may exacerbate this vulnerability. These results suggest that each schema

domain may influence psychological symptoms through distinct pathways. Therefore, psychological interventions should be tailored to address these differences. Interventions aimed at enhancing self-awareness of emotional needs and fostering boundary-setting skills may help reduce depressive symptoms. At the same time, strategies focused on improving self-efficacy and stress management skills may alleviate stress symptoms. Given the high intercorrelations among schema domains, these results should be interpreted cautiously, as multicollinearity or suppressor effects may have influenced the unique contributions of specific schemas. Future research should further disentangle these effects to clarify the pathways through which EMSs impact psychological symptoms.

Several recommendations can be made for future research. Increasing the sample size and including participants from diverse demographic and cultural backgrounds would enhance the generalizability of the results (Arcand et al., 2023; Lengua & Stormshak, 2000). Further research is needed to examine these relationships across different age groups and populations. Furthermore, future studies should assess the effectiveness of interventions targeting EMSs. Schema Therapy Theory suggests that individuals with similar EMSs may display different behavioral patterns (Young et al., 2003). Therefore, it is essential to consider individual differences and cultural contexts when designing and evaluating interventions (Moghaddam & Jomehri, 2016). Addressing these factors may enhance the reliability and cultural relevance of EMS-based interventions, informing strategies for reducing psychological symptoms.

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