

The Mediating Role of Humor Styles in the Relation between Early Maladaptive Schema Domains and the Severity of Depression Symptoms

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Keywords

Early maladaptive schemas, humor styles, depression symptoms, mediation analysis

Abstract

This study aimed to explore the indirect associations of the early maladaptive schema domains with the severity of depression symptoms through humor styles (i.e., self-enhancing, affiliative, self-defeating, and aggressive humor styles) in Turkish culture. Data were collected from 373 university students via demographic information form and the Turkish versions of Young Schema Questionnaire Short Form-3, Humor Styles Questionnaire, and Beck Depression Inventory. Using Hayes Macro, five separate mediation analyses were performed for testing the indirect associations, one for each schema domain. The results generally revealed that humor styles partially mediated the relationships between the schema domains and depression symptoms. Particularly, self-defeating humor style was found to be the most consistent mediator between the relationship the early maladaptive schema domains with the severity of depression symptoms. Also, the findings showed for the first time that aggressive style (partially) mediated the relations between some of the schema domains and depression symptoms and was negatively associated with these symptoms. Moving from these findings, it can be suggested that humor styles may serve as coping strategies for early maladaptive schemas. Thus, measuring and addressing humor styles in the treatment of depression symptoms may be beneficial in increasing the effectiveness of treatments. In addition, the current finding on aggressive humor style suggests that there may be cultural differences in the use of humor. However, cross-cultural studies are needed to conclude that cultural factors change the mediating role of humor styles in the relationship between schema domains and depression symptoms.

Erken Dönem Uyumsuz Şema Alanları ile Depresyon Belirtilerinin Şiddeti Arasındaki İlişide Mizah Tarzlarının Aracı Rolü

Öz

Bu çalışma, Türk kültüründe, erken dönem uyumsuz şema alanlarının, depresyon belirtilerinin şiddeti ile dolaylı ilişkilerini mizah tarzları (kendini geliştirici, katılımcı, kendini yıkıcı ve saldırgan mizah) aracılığıyla araştırmayı amaçlamıştır. Veriler demografik bilgi formu ile Young Şema Ölçeği Kısa Form-3, Mizah Tarzları Ölçeği ve Beck Depresyon Envanterinin Türkçe sürümleri kullanılarak 373 üniversite öğrencisinden elde edilmiştir. Söz konusu dolaylı ilişkileri test etmek için, Hayes Process Macro kullanılarak her şema alanı için bir tane olmak üzere beş farklı aracılık analizi gerçekleştirilmiştir. Bulgular, mizah tarzlarının genel olarak şema alanları ve depresyon belirtileri arasındaki ilişkilere kısmi olarak aracılık ettiğini ortaya koymuştur. Özellikle kendini yıkıcı mizah tarzının, erken dönem uyumsuz şema alanları ile depresyon belirtilerinin şiddeti arasındaki ilişide en tutarlı aracı olduğu bulunmuştur. Ayrıca mevcut bulgular ilk kez, saldırgan mizah tarzının, bazı şema alanları ile depresyon belirtileri arasındaki ilişkilere (kısmi olarak) aracılık ettiğini ve depresyon belirtileriyle negatif yönde ilişkili olduğunu göstermiştir. Bu bulgulardan hareketle, mizah tarzlarının erken dönem uyumsuz şemalar için başa çıkma stratejileri olarak hizmet edebileceği düşünülebilir. Dolayısıyla, depresyon belirtilerinin tedavisinde, mizah tarzlarının ölçülmesi ve ele alınması, tedavilerin etkinliğini artırmada faydalı olabilir. Ayrıca, saldırgan mizah ile ilgili mevcut bulgu, mizah kullanımında kültürel farklılıklar olabileceğini düşündürmektedir. Ancak, kültürel etmenlerin, şema alanları ile depresyon belirtileri arasındaki ilişide mizah tarzlarının aracı rollerini değiştirdiği sonucuna varabilmek için kültürler arası araştırmalara ihtiyaç vardır.

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Several approaches, such as Psychoanalytic (Freud, 1905), Attachment (Bowlby, 1973, 1988), Object Relations (Winnicott, 2005), and Cognitive (Beck et al., 1979) theories, have conceptualized the impacts of adverse childhood experiences on psychological problems. Similarly, Schema Therapy explained early childhood experiences' critical role in such outcomes (Young et al., 2003). Unlike the other theories, Schema Therapy puts the concepts of early maladaptive schemas at the center of its explanations. Accordingly, negative childhood experiences with family members and peers may lead to unhealthy core mental themes, coined early maladaptive schemas (EMS). Schema theorists assert that these maladaptive schemas shape individuals' emotions, thoughts, and perceptions of self and the world for a lifetime, which might create susceptibility to later psychological problems (Young et al., 2003).

Young et al. (2003) defined 18 EMSs categorized under five schema domains. The first domain is disconnection and rejection. Since individuals with this domain have unmet needs for safety, love, relatedness, and stability, they assume that their needs will never be met. The second domain is impaired autonomy and performance. Those with this domain typically doubt that they can survive and function independently and be successful. The third one is impaired limits. Individuals with the impaired limits generally have difficulties in respecting others' rights, making commitments, and setting and tracking long-term goals. The fourth domain is other-directedness. Those with this domain tend to sacrifice their own needs and desires to get others' approval and love. The last one is overvigilance and inhibition. Individuals with this domain generally strive to suppress their spontaneous feelings and impulses and achieve rigid and perfectionist goals, adversely affecting their happiness, relationships, and health.

From the view of Schema Therapy, when individuals with EMSs encounter any stressful life event, their schemas are activated. They become more likely to perceive themselves and the world negatively in a consistent manner with their EMSs despite their current resources, competencies, and relationships. Consequently, these individuals might be more vulnerable to develop various psychopathological problems, such as personality and mood disorders (Young et al., 2003). In this sense, previous research provided support for this view by indicating positive associations of early maladaptive schemas with borderline, obsessive-compulsive, avoidant, and dependent personality traits (Kunst et al., 2020) and depression (Davoodi et al., 2018; Halvorsen et al., 2010; see Nicol et al., 2020 for a review) and anxiety symptoms (Calvete, 2014; Camara & Calvete, 2012). Of these psychological problems, the severity of depression symptoms was determined as the outcome variable in the current study.

Schema Therapy also postulates that individuals with EMSs are liable to exhibit maladaptive coping strategies (i.e., avoidance, overcompensation, and surrender) that perpetuate schemas. Accordingly, these individuals might strive to avoid the situations and relationships that trigger their schemas (*avoidance*), display compensatory behaviors to prove that they do not have such schemas (*overcompensation*), or engage in self-defeating behaviors (*surrender*). These coping strategies are believed to mediate the association between EMSs and indicators of psychological problems (Young et al., 2003). Moving from this reasoning, considering that humor styles may be indicators of maladaptive coping strategies, Dozois and colleagues (2009) tested humor styles as potential mediators between EMSs and depression severity. Indeed, their findings supported the mediator roles of humor styles (except for aggressive style) between EMS domains and depression symptoms. However, their findings were merely based on the Canadian sample data, limiting their generalizability to collectivist cultures. Hence, the current study aimed to test similar indirect associations of EMSs with the severity of depression symptoms through humor styles in the Turkish culture, which differs

from Canadian culture in terms of various dimensions such as individualism, uncertainty avoidance, power distance, and indulgence (Hofstede et al., 2010).

Martin et al. (2003) defined four discrete humor styles: two are adaptive or beneficial (i.e., affiliative and self-enhancing) and the others are maladaptive or detrimental (i.e., aggressive and self-defeating). The affiliative style involves telling anecdotes and making spontaneous jokes to amuse others and enhance relationships. The self-enhancing type refers to the humorous perspective used to relieve tension and regulate emotions. The aggressive style refers to adopting a demeaning attitude against others and using sarcasm and teasing to feel better and maintain the own position in relationships. Lastly, the self-defeating style refers to using self-humiliating humor to gain others' approval or make up to others. A large body of research demonstrated that adaptive humor styles are negatively associated with depressive symptoms, whereas self-defeating humor style is positively associated with such symptoms (e.g., Dyck & Holtzman, 2013; Martin et al., 2003; also see Jiang et al., 2020 for a meta-analysis). However, there is no consistent support for the associations of aggressive humor style with depressive symptoms (e.g., Dyck & Holtzman, 2013; Martin et al., 2003).

Regarding the mediating role of the humor styles in the relation between EMSs and depressive symptoms, only one study with a Canadian student sample was conducted (Dozois et al., 2009). However, it has been known that some cultural varieties exist in using and perceiving humor. For example, in their review study, Jiang et al. (2019) found that Westerners were more likely than their Eastern counterparts to have a positive attitude towards humor and use humor as a coping strategy. This finding raises the possibility that the mediating role of humor styles in the relationship between EMS and depressive symptoms may vary according to cultural differences. Hence, the present study was designed to test this possibility in Turkey, which is accepted to have a collectivistic culture (Hofstede et al., 2010).

The present study aimed to examine the indirect associations of EMS domains with the severity of depression symptoms through humor styles. As noted, although such indirect associations were tested in the study of Dozois et al. (2009), a similar study has not been conducted in a relatively more collectivist culture to the best of our knowledge. Thus, to extend their findings, the current study was designed. It was expected that the EMS domains would significantly and positively predict the severity of depression symptoms through the humor styles. More specifically, it was hypothesized that (1) the EMS domains would predict maladaptive humor styles positively, which in turn maladaptive humor styles would predict the severity of depression symptoms positively and (2) the EMS domains would predict adaptive humor styles negatively, which in turn adaptive humor styles would predict severity of depression symptoms negatively.

Method

Participants

The study sample consisted of 373 volunteer university students recruited from a general psychology course at a large state university in Turkey. The study's inclusion criteria were being a university student and fluent in Turkish and exclusion criterion was being younger than 18 years old. After one participant had been eliminated due to the exclusion criterion, and the study analyses were conducted with 372 participants. Of them, 225 (60.5%) were women and the rest ($n = 147$, 39.5%) were men. The mean age was 21.44 ($SD = 1.79$), ranging from 18 to 30. Regarding relationship status, 211 participants (56.7%) had a romantic relationship, while the rest ($n = 161$, 43.3%) did not have any relationship.

Measurements

Demographic Information Form: This form was used to acquire the participants' background information about their age, gender, romantic relationship status, and whether they were students or not.

Young Schema Questionnaire Short Form-3 (YSQ-SF3): It is a 90-item self-report scale that Young developed to measure 18 EMSs categorized under five schema domains (Young et al., 2003). Respondents are asked to rate each item on a 6-point Likert-type scale ranging from 1 (*completely untrue of me*) to 6 (*describes me perfectly*). Hence, higher scores on the YSQ-SF3 reflect higher maladaptive schemas. Soygüt et al. (2009) adapted YSQ-SF3 into Turkish and found that the Turkish YSQ-SF3 has a structure with 14 schemas (i.e., vulnerability to harm, failure, abandonment, enmeshment/dependence, pessimism, defectiveness, social isolation/mistrust, emotional inhibition, emotional deprivation, entitlement/insufficient self-control, approval-seeking, unrelenting standards, punitiveness, self-sacrifice) and five higher-order factors (i.e., disconnection, impaired autonomy, impaired limits, other-directedness, and unrelenting standards). The internal consistency reliabilities of the Turkish version varied between .53 to .81 for the higher-order factors, i.e., schema domains. Three-week interval test-retest reliability coefficients of schema domains were found to be between .66 to .83. Regarding convergent validity, the schema domains were positively and significantly correlated with the global severity index (r ranged between .30 and .65, $p < .01$) and depression (r ranged between .55 and .68, $p < .01$) and anxiety (r ranged between .18 and .54, $p < .01$) subscales of Symptom Checklist-90-R. For discriminant validity, the clinical sample significantly had higher scores on most of the subscales of YSQ-SF3 as compared to the healthy sample. In the present study, the internal consistency reliabilities of schema domain factors were .95 for impaired autonomy, .94 for disconnection, .77 for impaired limits, and .81 for unrelenting standards and other-directedness.

Humor Styles Questionnaire (HSQ): It is a 32-item self-report scale that Martin et al. (2003) developed to assess individual differences in humor styles. It comprises four subscales: self-enhancing, affiliative, self-defeating, and aggressive humor styles. The former two reflect adaptive/healthy styles, and the latter two reflect maladaptive/unhealthy ones. Respondents are asked to rate each HSQ item on a 6-point Likert-type scale ranging from 1 (*totally disagree*) to 6 (*totally agree*). Therefore, higher scores on a particular HSQ subscale reflect higher use of that humor style. The Turkish adaptation study of HSQ was carried out by Yerlikaya (2003), and the original 4-factor structure of the HSQ was also found suitable for the Turkish sample. In the adaptation study, the internal consistency reliabilities were .78 for self-enhancing, .74 for affiliative, .61 for self-defeating, and .69 for aggressive style factors. Fifteen-day interval test-retest reliability coefficients of these humor styles were between .82 and .88. Regarding convergent validity, self-enhancing and affiliative humor styles were positively correlated with self-esteem ($r = .23$, $p < .01$ for both factors) and negatively correlated with depression ($r = -.21$, $p < .05$; $r = -.20$, $p < .05$ respectively), whereas self-defeating style was negatively correlated with self-esteem ($r = -.22$, $p < .01$) and positively correlated with depression ($r = .36$, $p < .01$). In the current study, the internal consistency reliabilities of the HSQ factors were .87 for self-enhancing, .85 for affiliative, .79 for self-defeating, and .65 for aggressive styles.

Beck Depression Inventory (BDI): It is a 21-item self-report scale developed by Beck (1961) to identify the severity and intensity of depression symptoms. Respondents are asked to rate each BDI item on an item-specific 4-point Likert-type scale, ranging from 0 (e.g., *I don't feel disappointed in myself*) to 3 (e.g., *I hate myself*). Thus, higher scores on BDI reflect more severe depression symptomology. The Turkish adaptation study of BDI was conducted by Hisli (1989), and the internal consistency and split-half reliabilities of the Turkish version were found to be .80 and .74, respectively. For convergent validity, the total score of BDI was

found positively and significantly correlated with the depression subscale of MMPI ($r = .50, p < .01$). In the current study, BDI was used to measure the severity of depression, and its internal consistency reliability was .90.

Procedure

After obtaining the study's ethical approval from the Human Subject Ethics Committee of Middle East Technical University, the study questionnaires were uploaded into a widely used online survey software, Qualtrics. Then the study was announced in the general psychology course taken by students from various disciplines using the SONA System, an online survey management system that allows potential participants to sign up for research studies. When interested students clicked on the study link at the SONA System, they were automatically redirected to the study website. The research website first informed them about the purpose and voluntary nature of the study, the anonymity of their responses, and their right to refuse to participate and withdraw from the study. After giving informed consent, participants moved on to filling out the questionnaires and completed them in approximately 25 minutes. As an incentive, additional 1-point course credit was given to the participants via the SONA System.

Data Analysis

The normality assumptions were checked using the skewness and kurtosis values of the variables, and no violation was detected. About descriptive statistics, the means and standard deviations of the variables and the zero-order correlation coefficients between them were examined. For hypothesis testing, five parallel mediation analyses –one for each schema domain– using the PROCESS macro for SPSS with a 10,000 bootstrap re-samples were performed, as this method allows testing the effects of multiple mediators simultaneously and determining which mediator has a stronger effect (Hayes, 2018). According to this method, if the 95% confidence interval for an indirect effect does not contain zero, that effect is acknowledged as significant. All the analyses were run with IBM SPSS Statistics for Windows, Version 25.0 (IBM Corp., 2017).

Results

Table 1 shows the results of descriptive statistics. According to the Pearson-zero order correlation results, adaptive humor styles negatively but self-defeating style positively correlated with depression symptoms. Surprisingly, aggressive humor style positively correlated with self-enhancing humor.

For the indirect association of the disconnection schema domain, the proposed model (see Fig. 1) was significant ($F(5, 366) = 44.79, p < .001$) and explained 38% of the variance in the severity of depression symptoms. According to the results of 95% bias-corrected confidence interval, self-enhancing ($b = .01, CI [.001, .019]$), self-defeating ($b = .03, CI [.012, .043]$), and aggressive humor ($b = -.01, CI [-.026, -.004]$) styles but not the affiliative one ($b = .00, CI [-.021, .018]$) mediated the relation between the disconnection schema domain and the severity of depression symptoms. More precisely, the disconnection schema domain negatively predicted self-enhancing humor style, and self-enhancing humor negatively predicted the severity of depression. Also, the disconnection schema domain positively predicted self-defeating and aggressive humor styles. Of these styles, the self-defeating humor positively predicted depression symptoms, while the aggressive one negatively predicted these symptoms. However, the direct association of the disconnection schema domain with depression symptoms was also significant ($c' = .22, p < .001$), indicating that self-enhancing, self-defeating, and aggressive humor styles only partially mediate this relationship.

Table 1
Means and Standard Deviations of the Study Variables, and the Correlation Coefficients between Them

Variables	M	SD	1	2	3	4	5	6	7	8	9	10
1. Age	21.44	1.79	–									
2. Disconnection	53.04	21.16	-.14**	–								
3. Impaired autonomy	66.87	25.94	-.12*	.83***	–							
4. Impaired limits	25.23	6.76	-.09	.40***	.29***	–						
5. Other-directedness	34.59	8.73	-.05	.53***	.61***	.35***	–					
6. Unrelenting standards	30.11	8.15	-.15**	.44***	.47***	.46***	.56***	–				
7. Self-enhancing humor style	33.39	10.32	-.02	-.12*	-.11*	.22***	.07	.01	–			
8. Affiliative humor style	42.36	8.76	-.02	-.46***	-.47***	.06	-.17**	-.06	.41***	–		
9. Self-defeating humor style	28.52	8.65	-.13**	.35***	.39***	.28***	.32***	.22***	.34***	.07	–	
10. Aggressive humor style	25.59	7.24	-.14**	.29***	.29***	.14**	.04	.12*	.14**	-.08	.35***	–
11. Depression symptoms	10.28	8.78	-.07	.59***	.61***	.29***	.41***	.33***	-.19***	-.30***	.29**	.07

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

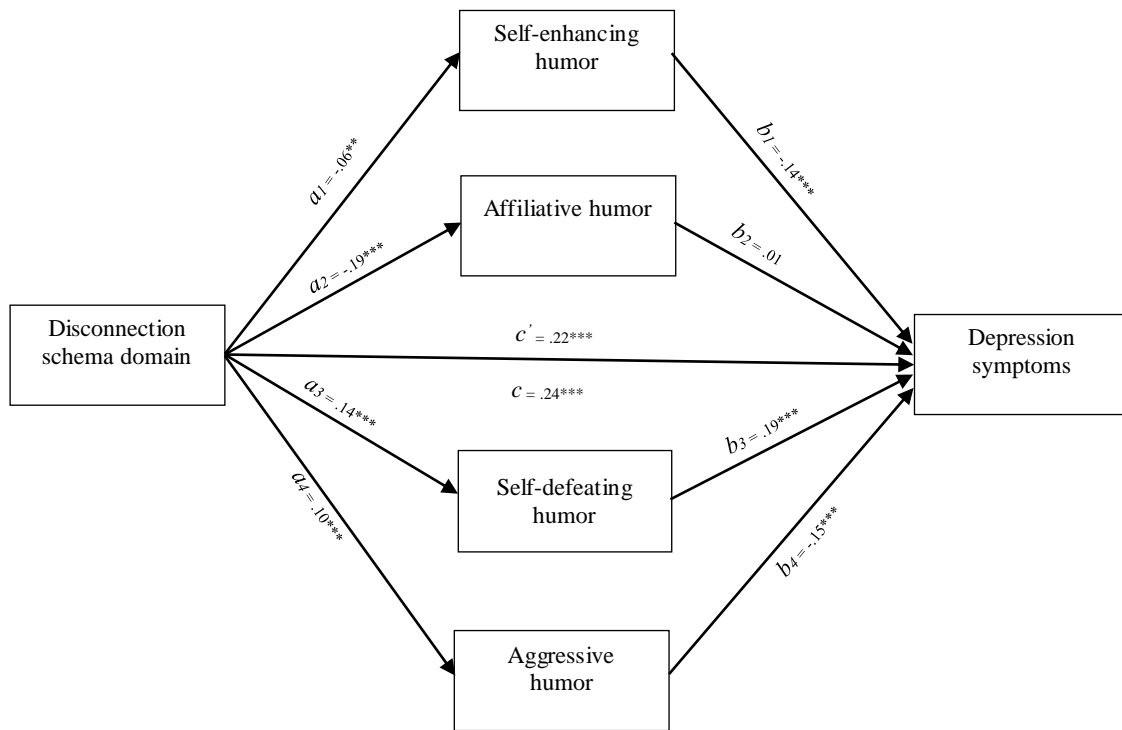


Figure 1. Parallel mediation model testing the indirect effect of disconnection schema domain on the depression symptoms via humor styles

Note 1. * $p < .05$, ** $p < .01$, *** $p < .001$, c' = direct effect, c = total effect.
 Note 2. Unstandardized coefficients are shown.

The second mediation model (see Fig. 2) was performed to test the indirect association of the impaired autonomy schema domain with depression symptoms via humor styles. The results yielded that the proposed model was significant ($F(5, 366) = 51.11, p < .001$) and explained 41% of the variance in the severity of depression symptoms. The 95% bias-corrected confidence interval results revealed that self-enhancing ($b = .01, CI [.001, .014]$), self-defeating ($b = .02, CI [.005, .031]$), and aggressive humor ($b = -.01, CI [-.020, -.003]$) styles were significant mediators between impaired autonomy domain and depression symptoms. Accordingly, impaired autonomy negatively predicted self-enhancing humor style, and self-enhancing humor negatively predicted depression severity. Moreover, impaired autonomy positively predicted self-defeating and aggressive humor styles. Of these styles, self-defeating humor positively predicted BDI scores, whereas aggressive humor negatively predicted BDI scores. In addition to these indirect associations, the direct effect of the impaired autonomy domain on depression symptoms was also significant ($c' = .20, p < .001$), showing that self-enhancing, self-defeating, and aggressive humor styles only partially mediate the relationship between the impaired autonomy domain and depression symptoms.

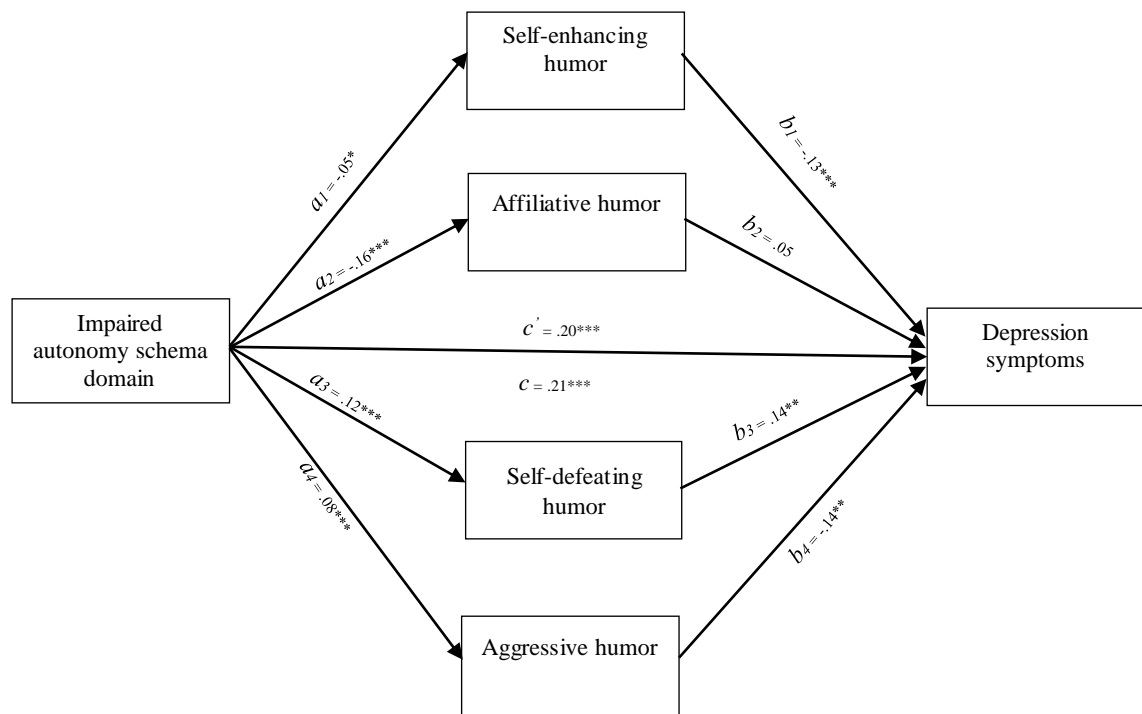


Figure 2. Parallel mediation model testing the indirect effect of impaired autonomy schema domain on the depression symptoms via humor styles

Note 1. * $p < .05$, ** $p < .01$, *** $p < .001$, c' = direct effect, c = total effect.
 Note 2. Unstandardized coefficients are shown.

The third model (see Fig. 3) was deployed to examine if the impaired limits domain indirectly predicts depression symptoms via humor styles. The proposed model was significant ($F(5, 366) = 27.53, p < .001$) and explained 27% of the variance in depression symptoms. The 95% bias-corrected confidence interval results showed that self-enhancing ($b = -.07, CI [-.121, -.033]$) and self-defeating ($b = .11, CI [.058, .175]$) humor styles mediated the relation between impaired limits domain and depression symptoms, while aggressive

humor ($b = -.01$, CI $[-.026, -.004]$) and affiliative ($b = .00$, CI $[-.021, .018]$) styles did not. More precisely, the impaired limits domain predicted higher scores on self-enhancing and self-defeating humor styles. Of these styles, the self-enhancing one negatively predicted BDI scores, while the self-defeating one positively predicted BDI scores. However, the direct association of the impaired limits domain with depression symptoms was also significant ($c' = .37$, $p < .001$), indicating that self-enhancing and self-defeating styles only partially mediate the relationship between the impaired limits domain and depression symptoms.

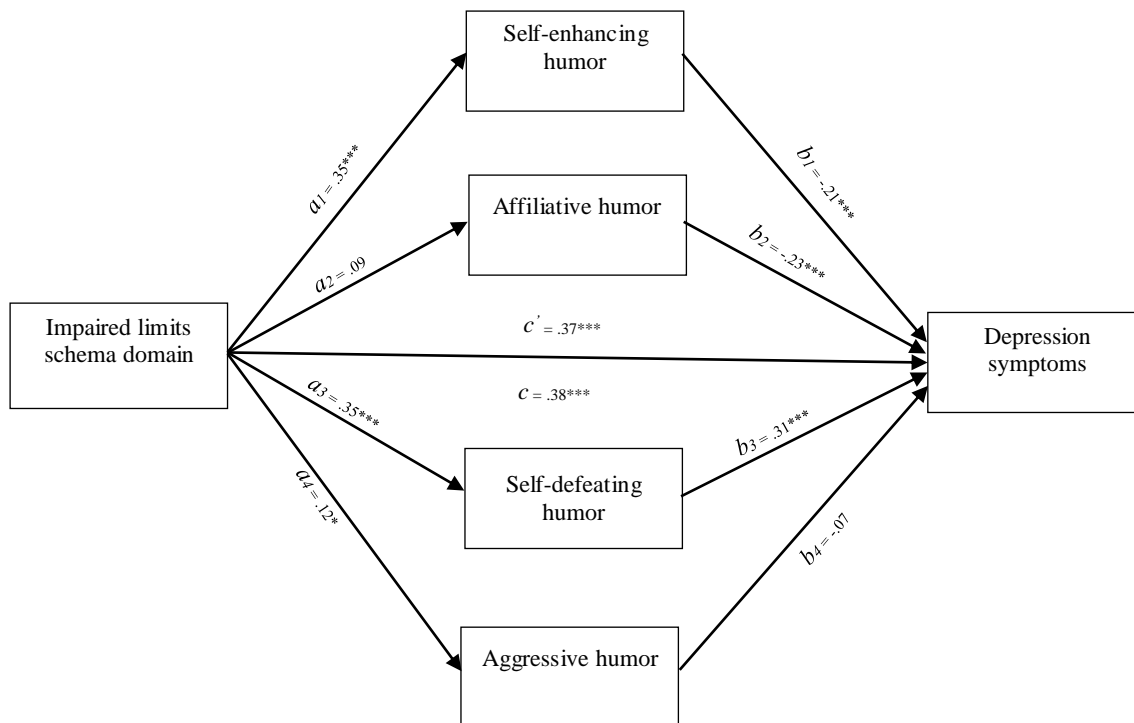


Figure 3. Parallel mediation model testing the indirect effect of the impaired limits schema domain on the depression symptoms via humor styles

Note 1. * $p < .05$, ** $p < .01$, *** $p < .001$, c' = direct effect, c = total effect.
 Note 2. Unstandardized coefficients are shown.

Concerning the indirect predictive effect of the other-directedness schema domain on BDI scores through humor styles, the proposed model (see Fig. 4) was significant ($F(5, 366) = 29.02$, $p < .001$) and explained 28% of the variance in the severity of depression symptoms. According to the 95% bias-corrected confidence interval results, only affiliative ($b = .03$, CI $[-.006, .053]$) and self-defeating ($b = .08$, CI $[-.043, .126]$) humor styles mediated the association of the other-directedness schema domain with depression symptoms. More precisely, the other-directedness domain predicted the affiliative humor style negatively and the self-defeating humor style positively. Of these styles, the affiliative one negatively predicted the severity of depression symptoms, whereas the self-defeating one positively predicted the severity of depression

symptoms. Besides, the direct association of the other-directedness schema domain was significant ($c' = .31$, $p < .001$), showing that affiliative and self-defeating humor styles only partially mediate the relationship between the other-directedness schema domain and depression symptoms.

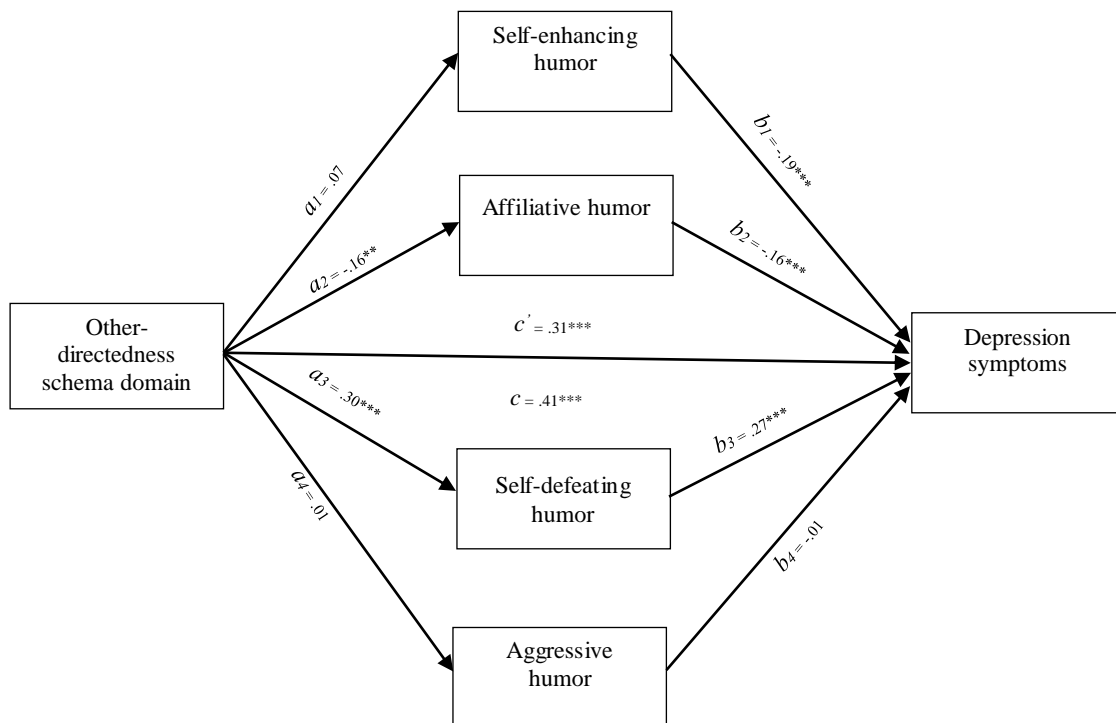


Figure 4. Parallel mediation model testing the indirect effect of the other-directedness schema domain on the depression symptoms via humor styles

Note 1. * $p < .05$, ** $p < .01$, *** $p < .001$, c' = direct effect, c = total effect.
 Note 2. Unstandardized coefficients are shown.

In the final parallel mediation analysis, the indirect predictive effect of the unrelenting standards schema domain on BDI scores via humor styles was tested (see Fig. 5). The overall model was significant ($F(5, 366) = 26.29$, $p < .001$) and explained 26% of the variance in the severity of depression symptoms. Based on the 95% bias-corrected confidence interval results, only the self-defeating humor style ($b = .07$, CI [.026, .119]) mediated the association of the unrelenting standards schema domain with the severity of depression symptoms. More precisely, the unrelenting standards schema domain predicted higher scores on self-defeating humor style, and self-defeating humor predicted more severe depression symptoms. As in the previous models, there was only a partial mediation, because the direct association of the unrelenting standards schema domain with BDI scores was also significant ($c' = .28$, $p < .001$).

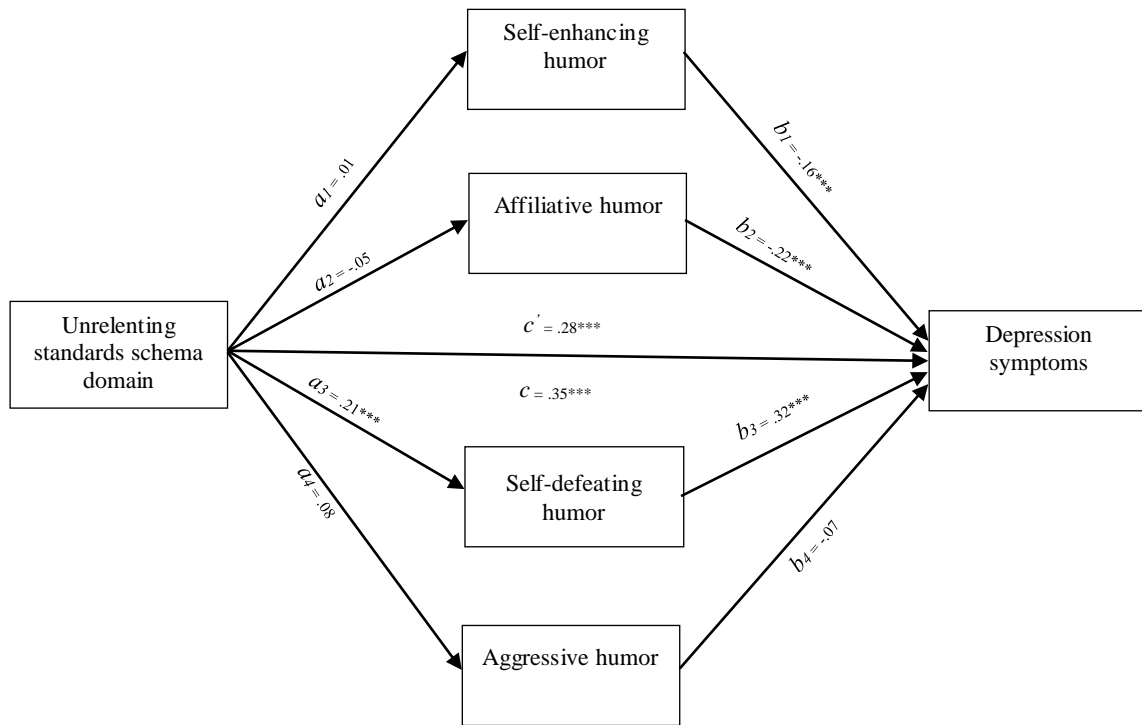


Figure 5. Parallel mediation model testing the indirect effect of the unrelenting standards schema domain on the depression symptoms via humor styles

Note 1. * $p < .05$, ** $p < .01$, *** $p < .001$, c' = direct effect, c = total effect.

Note 2. Unstandardized coefficients are shown.

Discussion

In this study, it was attempted to explore the indirect associations of the early maladaptive schema domains with the severity of depression symptoms through humor styles in Turkish culture. In literature, the indirect associations of the schema domains with the severity of depression symptoms through humor styles were tested only in an individualistic society (Dozois et al., 2009). This makes it difficult to draw a firm and generalizable conclusion about the mediator roles of humor styles in the relation between schema domains and depression symptoms. Hence, considering both the limited findings on this topic and the cultural differences (Hofstede et al., 2010; Jiang et al., 2019), similar indirect associations were examined in the current study with a Turkish sample.

Regarding the direct associations of early maladaptive schema domains with the severity of depression, the results showed that all of the early maladaptive schema domains significantly and positively predict the severity of depression symptoms. These findings are consistent with (1) the assumptions of schema therapy emphasizing that since individuals with EMSs are more likely to perceive themselves and the world negatively in a consistent manner with their EMSs, they might be more vulnerable to various

psychopathological problems, such as mood disorders (Young et al., 2003) and (2) the findings of recent meta-analysis studies showing the significant relationship between early maladaptive schemas and depression symptoms (Bishop et al., 2022; Tariq et al., 2021).

Concerning the indirect associations, the findings for the self-enhancing humor style showed that the schema domains of disconnection, impaired autonomy, and impaired limits had indirect associations with depression symptoms through the self-enhancing humor style. The disconnection and impaired autonomy negatively predicted the self-enhancing humor, and this humor style negatively predicted BDI scores, supporting the previous findings (Dozois et al., 2009). According to the Schema Therapy framework, the EMSs categorized under the disconnection and impaired autonomy domains are mostly unconditional schemas, suggesting that they are resistant to change. Individuals with these EMSs rigidly believe that they are unloved, inadequate, and unsuccessful and that it is impossible to change this situation (Young et al., 2003). When the current findings are considered with this Schema Therapy reasoning, it can be speculated that rigid and negative beliefs associated with the disconnection and impaired autonomy domains might have undermined the development and usage of our participants' self-enhancing humor style, which is one of the healthy coping strategies (Martin, 2006). Consequently, the deficiencies in this humor style might have caused the participants to experience higher depression scores. Although the results also supported the mediating role of self-enhancing humor style in the relation impaired limits domain and depression symptoms, a part of this finding was surprising. Contrary to our expectation and previous findings (e.g., Dozois et al., 2009; Dozois et al., 2013), the association between impaired limits domain and self-enhancing humor was positive, indicating that the participants with impaired limits domain were more likely to use self-enhancing humor style. However, given the novelty of this finding, it is better to approach it with caution.

As for the mediating role of affiliative humor style, the results established that affiliative humor style partially mediated the relationship between other-directedness schema domain and depressive symptoms. Accordingly, the participants with the other-directedness schema domain were less likely to use the affiliative humor style, and deficits in using this humor style might have increased the severity of depression in these individuals. Given that the previous evidence indicating that people in the collectivistic cultures have not positive attitude toward humor as much as their counterparts in the individualistic cultures (Jiang et al., 2019), our participants with other-directedness schema domain, for whom it is vital to get the approval of others (Soygüt et al., 2009; Young et al., 2003), might have evaluated the affiliative humor as an obstacle to attaining others' approval, and might have avoided this style. However, as this humor style is positively linked with positive affect (e.g., Ford et al., 2016; Kuiper et al., 2004), less using it may have resulted in the participants feeling more depressive symptoms.

Consistent with Dozois and colleagues' findings (2009), the current results demonstrated that the self-defeating humor style partially mediates the associations between the schema domains and depression symptoms. Specifically, all the schema domains positively predicted self-defeating humor, and self-defeating humor positively predicted BDI scores. This finding can be considered a support for the Schema Therapy assertion that individuals with EMSs are more likely to engage in maladaptive coping strategies such as avoidance, overcompensation, and surrender, which perpetuate the effects of EMSs and result in psychological problems (Young et al., 2003). When the current findings are considered with this assertion, the participants with higher scores in the schema domains may have used self-defeating humor as a surrender coping strategy for EMSs. However, since this type of humor represses emotional needs and intensifies the negative thoughts and perceptions (e.g., Kuiper & McHale, 2009; Martin et al., 2003), they might have experienced more depressive symptoms as a result.

Unlike the previous findings indicating that aggressive humor style does not mediate the relation between the schema domains and depressive symptoms (Dozois et al., 2009), the current study demonstrated that the disconnection and impaired autonomy schema domains had indirect associations with depressive symptoms through aggressive humor style. These schema domains positively predicted aggressive humor style, and aggressive humor style surprisingly predicted diminished BDI scores, suggesting that aggressive humor style might buffer the negative associations of disconnection and impaired autonomy schema domains with depressive symptoms. This finding might be due to three reasons. First, the poor reliability of aggressive humor style scale ($\alpha = .65$) might account for this finding. Second, using aggressive humor style, participants with these domains might tend to shift their focus from their schema domain-related vulnerabilities to deficiencies of others around them. In other words, participants may avoid negative feelings and thoughts about themselves in this way. Consequently, they might experience less severe depression symptoms. Third, cultural factors might have played a role in this finding. Since Turkish culture is relatively more collectivistic than Canadian culture, keeping the group harmony has more critical importance in Turkish culture (Hofstede et al., 2010). Hence, not to disturb the group harmony, as compared to their Canadian counterparts, (1) individuals in Turkey may use the aggressive humor style more carefully/naively, and (2) individuals in Turkey exposed to this humor style may be more tolerant of those using the aggressive style. Thus, the negative consequences of aggressive humor style associated with the depressive symptoms might not engender. However, it should be kept in mind that this finding does not imply that aggressive humor style is adaptive and associated with psychological well-being. Despite its current negative association with depression symptoms, aggressive humor style might still have detrimental effects on interpersonal relations and other psychological problems such as externalized ones (e.g., aggressive behaviors, hostility, and violence) or narcissistic personality disorder characteristics.

This study has at least three shortcomings to be considered. First, as this study has a cross-sectional design, the results do not reveal a cause-effect relationship. Thus, longitudinal studies are recommended to attain causal findings regarding the mediating role of humor styles in the relationship between EMSs and depression severity. Second, when considered the evidence establishing cultural variations in humor use (Jiang et al., 2019) and the differences between the findings of the current study and the previous one (Dozois et al., 2009), the possibility is that cultural factors might influence the relationships tested became more vigorous. Nevertheless, drawing a firm inference about the cultural factors based on the current findings might be fallible as this study included only a Turkish sample. Thus, cross-cultural studies are needed to reach a firm conclusion about the impacts of cultural factors on the indirect associations of schema domains with depression symptoms via humor styles. Third, as the study sample consisted of university students, the generalizability of the findings is limited. Hence, to reach more generalizable results, further studies with a representative sample are suggested.

Overall, the present findings showed that humor styles partially mediated the relations between the EMS domains and the severity of depression symptoms, supporting the reasoning that humor styles might be indicators of adaptive or maladaptive coping strategies for EMSs. Thus, in treating depression symptoms, measuring and addressing humor styles in therapy sessions might be helpful to reach better therapy outcomes. Besides, unlike previous findings (Dozois et al., 2009), the current results demonstrated that aggressive humor style negatively predicted depression symptoms and mediated the relationships between schema domains and depression symptoms, suggesting that aggressive humor might be protective for depression symptoms. Even though this surprising finding strengthened the possibility that cultural differences might impact the relations between humor styles and psychological outcomes, cross-cultural studies are needed to make more precise inferences about the role of cultural factors in these relations.

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