

Mediating Roles of Problem-Focused and Emotion-Focused Coping Styles Between Adverse Life Events and Aggression

Olumsuz Yaşam Olayları ve Saldırganlık Arasında Problem-Odaklı ve Duygu-Odaklı Başa Çıkma Tarzlarının Aracı Rollerini

✉ Merve Koçak Çapkın¹, ✉ Merve Vatansever²

¹Çankırı Karatekin University, Çankırı

²Kırıkkale University, Kırıkkale

ABSTRACT

Stressful or adverse life events play a role in the development of concurrent or subsequent aggressive behavior. Moreover, coping strategies determine how to react when faced with adverse events. The present study aimed to investigate the mediating roles of coping styles in the relationship between adverse life events and aggression among university students. Three hundred sixteen university students, 213 (67%) female, and 103 (33%) male, participated in this study. The Demographic Information Form, Life Experiences Survey, Coping Style Scale, and Aggression Inventory were applied for data collection. The results showed that males had higher aggression scores than females. Individuals who experienced more adverse life events were more likely to use an emotion-focused coping style and had higher aggression levels than those who experienced more positive life events. When the effects of age and gender were controlled, both emotion-focused and problem-focused coping styles had partial parallel mediating roles in the relationship between adverse life events and aggression. The findings reveal that experiencing adverse life events and using more emotion-focused coping style had a role in increasing aggression, while using problem-focused coping style had a role in reducing aggression. Overall, the findings of this study have important implications for guiding mental health professionals working with university students by showing that the development of effective coping styles for those who experience adverse life events should be supported.

Keywords: Adverse life events, problem-focused coping, stress, aggression

ÖZ

Stresli ya da olumsuz yaşam olayları, saldırgan davranışın gelişimine neden olan veya artıran bir rol oynamaktadır. Aynı zamanda, başa çıkma yöntemleri olumsuz olaylarla karşılaşıldığında nasıl tepki verileceğini belirlemektedir. Bu çalışmada, üniversite öğrencilerinde olumsuz yaşam olayları ve saldırganlık arasında stresle başa çıkma tarzlarının aracılık rolünün incelenmesi amaçlanmıştır. Araştırmaya 213'ü (%67) kadın ve 103'ü (%33) erkek, toplam 316 üniversite öğrencisi katılmıştır. Veri toplamak için Demografik Bilgi Formu, Yaşam Olayları Ölçeği, Stresle Başa Çıkma Tarzları Ölçeği ve Saldırganlık Envanteri uygulanmıştır. Araştırma bulgularına göre, erkeklerin kadınlara göre saldırganlık puanları daha yüksektir. Daha fazla olumsuz yaşam olayları deneyimlediğini bildiren katılımcıların, daha fazla olumlu yaşam olayları yaşadığını bildiren katılımcılara göre duygu-odaklı başa çıkma tarzı ve saldırganlık puanları daha yüksektir. Yaşın ve cinsiyetin etkisi kontrol edildiğinde olumsuz yaşam olayları ve saldırganlık arasındaki ilişkide stresle hem duygu-odaklı hem de problem-odaklı başa çıkma tarzlarının kısmi aracı role sahip olduğu belirlenmiştir. Olumsuz yaşam olayları ile saldırganlık arasındaki ilişkide duygu-odaklı başa çıkma tarzı saldırganlığı artırıcı bir role sahipken, problem-odaklı başa çıkma tarzı ise saldırganlığı azaltıcı bir role sahiptir. Genel olarak, çalışma kapsamında elde edilen bulguların olumsuz yaşam olayları yaşayanlar için etkili başa çıkma yöntemlerinin geliştirilmesinin desteklenmesi gerektiğini göstererek ruh sağlığı alanında üniversite öğrencileri ile çalışan uzmanlara yol gösterici olacağı düşünülmektedir.

Anahtar sözcükler: Olumsuz yaşam olayları, problem-odaklı başa çıkma, stres, saldırganlık

Introduction

Emerging adulthood, a period spanning from the age of 18 to the end of the twenties, is characterized by discovery and change, as well as the establishment of permanent choices in terms of worldview, education, work, and close relationships (Arnett 2000, 2007, Arnett et al. 2014). After graduating from high school, university students enter a new learning environment and encounter a range of life events, such as leaving home, academic responsibilities, paying their expenses, finding a job, dating, and close relationships that are typical of emerging

Address for Correspondence: Merve Koçak Çapkın, Çankırı Karatekin University Faculty of Letters Department of Psychology, Çankırı, Türkiye **E-mail:** mervekocak@karatekin.edu.tr

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adulthood period events (Dwyer and Wyn 2004, Reifman et al. 2007). Unfortunately, difficulties in coping with these experiences in this life stage may cause mental health issues (Mosallam and Thabet 2016, Ding et al. 2022), increase the risk of suicide (Dogra et al. 2008, Tang et al. 2015), alcohol and substance use problems (Rafnsson et al 2006, Tavalacci et al. 2013), and also violent or aggressive behavior (Maxwell and Siu 2008, Brown et al. 2017, Werbart Törnblom et al. 2021).

Research suggests that stressful or adverse life events have a place in the development of concurrent or subsequent aggressive behavior (Owen et al. 2004, Sprague et al. 2011, Brown et al. 2017, Huang et al. 2017). The General Aggression Model (Anderson and Bushman 2002) suggests aggressive behavior emerges from a combination of individual differences and environmental factors. Adverse events, in particular, have been identified as an environmental factor that contributes to the emergence of aggressive behavior (Anderson and Bushman 2002, Anderson et al. 2008, DeWall et al. 2011). The effect of gender as an individual factor on aggression is also controversial. In studies conducted with emerging adults, being male predicts physical aggression (Çelik and Onat-Kocabıyık 2014, Björkqvist 2018). At the same time, males exhibit higher levels of destructive and passive aggression behaviors than females (Hasta and Güler 2013). On the other hand, general aggression behaviors have not differed between male and female students (Shaban and Kumar 2016). In a study conducted with university students, neurotic personality partially mediates the correlation between adverse life events and trait aggression, and females differ from males only in terms of physical aggression (Sun et al. 2016). Male university students who experienced four or more adverse life events in an academic year demonstrated higher levels of violent behavior compared to those who did not (Gelaye et al. 2008). During late adolescence, increased levels of resilience tend to diminish for adopting aggression in response to adverse life events, and low self-esteem is considered a crucial indicator of aggressive behavior (Yang et al. 2023). Additional research is required to comprehend the various factors that influence aggressive behavior in situations where adverse life events are connected, as studies indicate.

Various studies have demonstrated that adverse life events lead to both self-directed harm (e.g., suicide) and aggressive behavior toward others (e.g., physical violence) (Liu and Tein, 2005, Cupina 2009, Chang et al. 2016). Therefore, the way individuals cope with such adverse life events will be crucial to reducing the risk of harmful behaviors. Using negative coping skills when confronted with stressful life events is related to increasing symptoms of schizophrenia (Wang et al. 2021), raising depressive symptoms in adolescents with health problems (Lewis et al. 2015), and substance use relapses (Anderson et al. 2006). Perceived stress may trigger negative behaviors and consequences, as well as the ability to effectively cope with adverse emotions is linked to an individual's capacity to manage stress. The Interactional Stress and Coping Theory (Lazarus and Folkman 1984) assumes that stress emerges due to a disparity between the internal or external demands an individual perceives during their interaction with the environment and the available individual and societal resources. At this point, cognitive evaluation of an event or situation plays a crucial role in specifying the coping strategies used by the individual. This cognitive assessment process consists of three stages: primary appraisal, secondary appraisal, and reappraisal. In primary appraisal, the event is evaluated for its potential threat, challenge, or harm to one's resources and subjective well-being. In secondary appraisal, the relevance and effectiveness of coping resources for dealing with the event or situation are assessed, with consideration given to whether the event is personally controllable. In reappraisal, the effectiveness of coping methods is tested and the situation is reevaluated through a process of psychological adjustment (Lazarus and Folkman 1984).

Stress coping styles of individuals play an important role in how they react to life events, because adverse life events may lead to harmful behaviors (Sun et al. 2016, Huang et al. 2017). Disruptive behaviors are possible consequences of perceived stress. The ability to cope with negative emotions is influenced by an individual's ability to deal with stress effectively. Cognitive evaluation in the interpretation of an event or situation determines the coping styles of a person (Lazarus and Folkman 1984). Coping involves the utilization of cognitive and behavioral strategies to lessen, endure, and surmount the internal and external pressures arising from challenging circumstances (Folkman and Lazarus 1980). Coping has a dynamic structure that changes depending on the situation rather than a personality trait (Folkman et al. 1986). Folkman and Lazarus (1980) divided coping with stress into two categories: (i) problem-focused coping (active coping: the engagement in constructive and direct problem-solving methods, which entails activities such as problem identification and seeking support); and (ii) emotion-focused coping (passive coping: taking steps to moderate the emotional reaction to difficulties, including avoidance behavior or seeking assistance for emotional support). Both coping styles can be employed in a context-specific manner. Lazarus (1993) suggests that the effectiveness of coping styles in reducing perceived stress is determined by selecting the proper approach when confronted with an adverse event. Perceived stress is related to the compatibility between the coping style used by the person and the level of controllability of the event (Folkman 1984, Lazarus and Folkman, 1984). Typically, individuals

employ both coping styles to manage challenging and stressful circumstances (Lazarus, 2000). While problem-focused coping styles are used when the consequences of the event are predictable, controllable, and changeable, emotion-focused coping methods are used more in circumstances where the results are unpredictable, out of control and unchangeable (Folkman, 1984). Nevertheless, problem-focused coping, aimed at resolving the root cause of stress, proves to be more effective compared to emotion-focused coping, which focuses on alleviating emotional responses (Kim et al. 2003, Clarke 2006). In the face of adverse life events, problem-focused coping will facilitate adaptation and well-being by increasing individuals' beliefs that they control the event and that the consequences are changeable.

Coping styles may change according to the type of event and demographic features. For instance, Folkman and Lazarus (1980) demonstrated that people often employ more problem-focused coping styles when addressing work-related stressors while using more emotion-focused coping styles for health-related stressors. More recent studies have drawn attention to gender differences in coping strategies among university students. Female students stated higher degrees of stress in familial and social relationships, and greater use of emotion-focused coping strategies than male students (Brougham et al. 2009). Female students are prone to perceive life events as more negative and less controllable (Matud 2004) and report more psychological stress than males (Hall et al. 2006). On the other hand, age can change gender differences in coping styles. Flannery et al. (2018) reported that females use more active and maladaptive emotion-focused coping in comparison to males between the ages of 15 and 19, but this difference disappears over time, and males become equivalent in these coping styles to females after the age of 19-20.

On the other side, the ways of coping used by the individual in response to life events have both positive and negative consequences. While problem-focused coping style and social networks have been linked to affirmative and curative effects on stress-related health issues (Chan et al. 2006), emotion-focused coping styles and avoidance are correlated with adverse health outcomes (Perez-Tejada et al. 2019). Emotion-focused coping styles, such as avoidance, abandonment, and giving up in the face of stress, reduce an individual's sense of control, leave problems unresolved, and contribute to tension (Ito and Brotheridge 2003). Prior studies have established a positive association between aggression and dysfunctional coping styles, while indicating a negative correlation between aggression and functional coping styles (Whitman and Gottdiener 2015). Emotion-focused coping, one of the dysfunctional coping styles, is associated with physical aggression (Carlo et al. 2012) and criminal behaviors (Ferrer et al. 2010) in adolescents. On the contrary, individuals who use problem-focused coping styles aim to adapt more easily in the face of changes brought about by life events (Benus et al. 1991). It is emphasized that problem-focused coping style is moderately effective for the control of anger, aggression, and vengeful thoughts, and it is the best coping style that is adopted for the control of anger and aggression (Maxwell and Siu 2008).

Previous studies have indicated that there are significant relationships between life events, particularly adverse life events, coping styles, and aggression (e.g., Carlo et al. 2012, Whitman and Gottdiener 2015, Brown et al. 2017). However, studies investigating the relationship between adverse life events and aggression are quite limited, as they have not sufficiently explored the potential effects of adverse life events on aggressive behavior. This suggests that coping styles may mediate the relationship between adverse life events and aggression. Comprehending the mediating factors within the relationship between adverse life events and aggression among university students will provide valuable insights for clinical implications in preventing detrimental behavioral outcomes following such events. Interactional Stress and Coping Theory proposes that problem-focused or emotion-focused coping styles can be chosen based on the perception of the content of the stressor (Lazarus and Folkman 1984). However, selecting problem-focused or emotion-focused coping is decisive for outcomes, such as aggression, regarding the effectiveness of coping with adverse life events (Benus et al. 1991, Maxwell and Siu 2008, Carlo et al. 2012).

Therefore, the current study is aimed to test the parallel mediating role of stress coping styles in the relationship between adverse life events and aggression in university students. Additionally, the objective of this study is to examine potential differences in aggression and stress coping scores among university students, taking gender into account, based on their experiences of positive and adverse life events. The main research hypotheses are the following: (1) adverse life events are positively related to aggression and emotion-focused coping; while adverse life events are negatively related to problem-focused coping, (2) emotion-focused coping is positively related to aggression, while problem-focused coping is negatively related to aggression; and (3) both emotion-focused and problem-focused coping mediate the relationship between adverse life events and aggression.

Method

Sample

The sample of the current research comprises 316 university students ($M_{age} = 21.8$, $SD_{age} = 2.97$), of whom 213 (67%) were female and 103 (33%) were male. The data for the study were collected from university students studying at Ankara University and Çankırı Karatekin University who voluntarily agreed to participate in the research. Regarding the income levels of the participants included in the study, 50% were low-income, 14.6% were low-medium, 53.8% were medium, 13% were medium-high, and 1.9% were high-income.

Data were collected from students in their second-year and above, as evaluating the life experiences of first-year students, including their university time, can be impractical at the onset of the fall semester. Within the sample group of undergraduate students, 29.43% were in their second-year, 30.7% in their third, and 39.87% in their fourth year of study. As a result, Turkish students aged 18 to 29 who had at least a second-year undergraduate academic degree participated in the research voluntarily and signed the informed consent form were included in the sample. Students who are older than 29 years old and foreigners were excluded from the study.

Firstly, G*Power analysis was conducted to specify the minimum sample size for preliminary analysis (MANCOVA). Results indicated that a minimum of 113 participants are suitable for the multivariate analysis of covariance with four groups (female, male, participants who reported more adverse life events, and participants who reported more positive life events), two predictors (gender and life events), three response variables (problem-focused coping, emotion-focused coping and aggression), and a covariate (age). Then, Monte Carlo power analysis for two-model analysis was used to establish the sample size. In the analysis, the target power level was determined to be .80 and the minimum sample size for two parallel mediation models was found to be 172 participants. The sample of the current study was 316 participants. According to Monte Carlo power analysis, the present sample size was sufficient.

Procedure

Ethical approval was obtained for the study with the decision dated November 30, 2020, and numbered 17/262 by applying to the Ankara University Ethics Committee. Before the application, the participants were notified about volunteering and privacy policies. It was stated that they could withdraw from the research whenever they wanted or if they felt any discomfort with the questions, that the information they provided would be used for scientific purposes and evaluated collectively, and that it would not be shared with anyone other than the researchers. Written informed consent was obtained from the participants and then study measures were applied. The students expressed their willingness to participate in the research without any form of financial compensation or the expectation of additional academic grades. Scales were applied to the participants in different orders to control the sequence effect. Data were collected in a classroom environment at university in the 2022-2023 academic year's fall semester. Participants completed the scales independently and completed the forms in approximately 20 minutes.

Measures

The Demographic Information Form (including questions such as age, gender, department, and grade of the participants), Life Experiences Survey, Coping Styles Inventory, and Aggression Inventory were applied for data collection.

Life Experiences Survey

The original form of the survey was developed to measure positive and adverse life events experienced by young adults (Sarason et al. 1978). The scale assesses life events that individuals have encountered in the past six months or a year and consists of 56 items. Participants are asked whether they have experienced the events listed on the scale in the last year, and if so, they are requested to state whether they perceive the experiences as positive, adverse, or ineffective. Participants rate the effect of these events on a scale ranging from -3 to +3. The sum of scores for events that are evaluated negatively constitutes the total adverse life events score. The Turkish form of the scale was translated by Aslanoğlu (1978). However, the last 10 items of the scale about university students were adapted by Tüzün (1997). Test-retest reliability was found as .83 in Aslanoğlu's (1978) study. Items that were not thought to be related to university students (marriage, loss of a spouse, etc.) were removed in Tüzün's (1997) study, and Cronbach's alpha was calculated as .67. Cronbach's alpha in this study was calculated as .73. Scale items that were determined to be unrelated to university students (items about spouse,

mother-in-law, father-in-law, relations with the employer, job loss, and, job change) were excluded from the scope of this research. Participants were requested to provide responses to a list of 43 items in total, which included items relating to university students such as marriage, imprisonment, accident, and death of a close family member; relatives, significant changes in financial status; engagement, starting or ending romantic relationship; leaving home for the first time, starting university, academic success/failure; going into debt, sexual problems, illness, and mental health issues. Cronbach's alpha coefficient for reliability was calculated as .73 in this study.

Coping Styles Inventory

The Inventory, developed by Folkman and Lazarus (1980), evaluates the coping styles of individuals in different stressful situations. The scale comprised 30 items with a 4-point Likert type. It measures two coping ways with stress: problem-focused/active style and emotion-focused/passive style. The subdimensions of active style are "Self-confident", "Optimistic" and "Seeking of Social Support", while "Submissive" and "Helpless" are subdimensions of passive style. Scoring of the scale is computed in two different ways. In the first of these methods, the items belonging to the four sub-dimensions are collected and a total score is obtained for each sub-dimension. Secondly, the total score for both coping styles is calculated by summing the items of the coping methods in the problem-focused and emotion-focused dimensions of the scale. The Turkish version of the inventory was carried out by Şahin and Durak (1995). In the current study, an evaluation of the Stress Coping Styles Scale was conducted in terms of problem-focused coping and emotion-focused coping styles. Cronbach's alpha was found to be .83 and .74 respectively.

Aggression Inventory

Aggression Inventory was modified by Gladue (1994) to evaluate different categories of aggression. It comprised 30 items, although only 20 were used for evaluation, and was scored on a 5-point Likert scale. The scale has four subdimensions: "Physical Aggression," "Verbal Aggression," "Impulsive Aggression," and "Avoiding Aggression." Çelik and Otrar (2009) translated and adapted the scale into Turkish. Cronbach's alpha was found as .75 for "Physical Aggression", .69 for "Verbal Aggression", .63 for "Impulsive Aggression", .58 for "Aggression Avoidance", and .82 for total score. In the current study, the aggression score was obtained by summing all subdimensions of the scale except for the Aggression Avoidance sub-dimension. Cronbach's alpha was calculated as .87.

Statistical Analysis

The IBM SPSS 20.0 statistical program was utilized in the analysis of the data. It was determined that the data were normally distributed based on the skewness and kurtosis values. Before establishing the relationship between aggression and adverse life events, it was planned to reveal whether the aggression levels and coping strategies of the participants who reported experiencing positive life events differed from those who experienced adverse life events in terms of gender. The participants were then divided into two groups depending on the scores obtained from the Life Experiences Survey, with one group comprising those with more positive life events and the other group comprising those with more adverse life events. MANCOVA was done to figure out the role of gender and adverse life events (positive and adverse) on coping styles and aggression, controlling for the effect of age. The groups with high positive and adverse life events scores were compared in terms of coping styles and aggression scores.

A Pearson correlation analysis was conducted as a preliminary analysis for the main model analysis to examine the relationships between study variables. The main model analysis was formed with adverse life events as a predictor variable, aggression as a predicted variable, and the two subdimensions of the Coping Styles Inventory, were identified as mediator variables. The mediating role of both coping styles was simultaneously tested. Finally, the research model was tested by applying the Bootstrap method (Preacher and Hayes 2008) and the PROCESS macro extension of Hayes (2013) for parallel mediation analysis.

Results

Preliminary Analysis

Firstly, the effects of gender and life events on coping styles and aggression were examined. The sample was divided into two groups based on their scores on the Life Experiences Survey, with one group comprising those with more positive life events (n = 94) and the other group comprising those with more adverse life events (n =

204). Participants with equal scores on positive and adverse life events ($n = 18$) were not included in the analysis. A 2 (gender: female and male) X 2 (life event: positive and adverse) MANCOVA was conducted, controlling for the effect of age.

The results showed that, the main effect of age was not significant [Wilks' $\lambda = .99$, $F(3,291) = .84$, $p = .47$, $\eta^2 = .01$], but gender [Wilks' $\lambda = .93$, $F(3,291) = 7.54$, $p = .00$, $\eta^2 = .07$], and life events [Wilks' $\lambda = .88$, $F(3,291) = 13.79$, $p = .00$, $\eta^2 = .12$] made statistically significant differences. The main effect of gender on aggression was significant [$F(1,293) = 13.61$, $p = .00$; $\eta^2 = .04$] and males had higher aggression scores ($M = 44.24$, $SD = 10.66$) than females ($M = 38.97$, $SD = 11.83$). The effect of gender on problem-focused coping [$F(1,293) = 3.88$; $p = .05$; $\eta^2 = .01$] and emotion-focused coping [$F(1,293) = 1.10$, $p = .30$, $\eta^2 = .00$] was not significant.

The main effects of life events on problem-focused coping [$F(1,293) = 23.66$, $p = .00$, $\eta^2 = .08$], emotion-focused coping [$F(1,293) = 17.63$, $p = .00$; $\eta^2 = .06$], and aggression [$F(1,293) = 13.68$, $p = .00$, $\eta^2 = .04$] were also significant. Participants with higher scores in positive life events ($M = 33.56$, $SD = 6.50$) had higher problem-focused coping scores than participants with higher scores in adverse life events ($M = 28.98$, $SD = 6.84$). Besides, participants with higher scores in adverse life events ($M = 17.56$, $SD = 6.46$) had higher scores in emotion-focused coping than participants with higher scores in positive life events ($M = 13.66$, $SD = 5.40$). Aggression scores were also found to be higher among participants who reported higher adverse life events scores ($M = 42.52$, $SD = 11.68$) compared to those who reported higher positive life events scores ($M = 36.78$, $SD = 10.82$).

Finally, the interaction effect of gender and life events was insignificant [Wilks' $\lambda = .99$, $F(3, 291) = .59$, $p = .62$, $\eta^2 = .01$]. The mean scores and standard deviations of the groups for all the variables are given in Table 1.

Table 1. Descriptive statistics of coping styles and aggression scores by gender and life events

	Life events	Gender	Mean	SD
Problem-focused coping style	Positive	Female	33.10	6.64
		Male	34.51	6.20
		Total	33.56	6.50
	Adverse	Female	28.21	7.02
		Male	30.56	6.22
		Total	28.98	6.84
	Total	Female	29.75	7.25
		Male	31.81	6.45
		Total	30.43	7.05
Emotion-focused coping style	Positive	Female	13.70	5.41
		Male	13.57	5.47
		Total	13.66	5.40
	Adverse	Female	18.23	6.74
		Male	16.20	5.66
		Total	17.56	6.46
	Total	Female	16.80	6.68
		Male	15.37	5.71
		Total	16.33	6.40
Aggression	Positive	Female	34.95	10.18
		Male	40.48	11.30
		Total	36.78	10.82
	Adverse	Female	40.82	12.11
		Male	45.98	9.96
		Total	42.52	11.68
	Total	Female	38.97	11.83
		Male	44.24	10.66
		Total	40.70	11.70

To see relationships between all research variables, Pearson's correlational analysis was carried out (see Table 2). There were significant negative relationships between adverse life events and problem-focused coping ($r = -.22$, $p = .00$), and significant positive relationships between adverse life events and emotion-focused coping ($r = .27$, $p = .00$) and aggression ($r = .23$, $p = .00$). Additionally, there were also significant relationships between aggression and problem-focused coping ($r = -.20$, $p = .00$), also aggression and emotion-focused coping ($r = .20$, $p = .00$). On the other side, there was a significant positive relationship between positive life events and problem-focused coping ($r = .26$, $p = .00$). However, the relations between positive life events and emotion-focused coping ($r = -.03$, $p = .61$), as well as positive life events and aggression were insignificant ($r = -.01$, $p = .89$).

Table 2. Correlations between positive and adverse life events, coping styles, and aggression

	1	2	3	4	5	6
1. Age	-					
2. Positive life events	.07	-				
3. Adverse life events	-.05	.11	-			
4. Problem-focused coping style	.08	.26**	-.22**	-		
5. Emotion-focused coping style	-.12*	-.03	.27**	-.23**	-	
6. Aggression	-.03	-.01	.23**	-.20**	.20**	-
Mean	21.84	5.29	9.47	30.40	16.25	40.59
SD	2.97	4.92	8.42	7.06	6.31	11.63

*p < .05, **p < .01, SD: standard deviation

Parallel Mediator Model Analysis

The correlation analysis revealed a significant relationship between adverse life events and aggression, but the relationship between positive life events scores and aggression was insignificant. Therefore, a parallel mediator model analysis was conducted to examine whether problem-focused coping and emotion-focused coping with stress mediated the relationship between adverse life events and aggression. The confounding effects of gender and age were controlled in the mediation analysis. As a result, the parallel mediation analysis with two mediators was tested using Process Model 4. The mediation role of coping styles was tested with the bootstrapped resampling method recommended to diminish the significance of multivariate normality assumptions especially in multiple mediator models (Preacher and Hayes 2008). Specifically, 5000 bootstrap samples were used and 95% confidence intervals (CI) were evaluated to indicate the significance of indirect paths. In this direction, the absence of zero within the lower and upper %95CI values shows the statistical significance of the indirect effect and the significant mediator role in the present study.

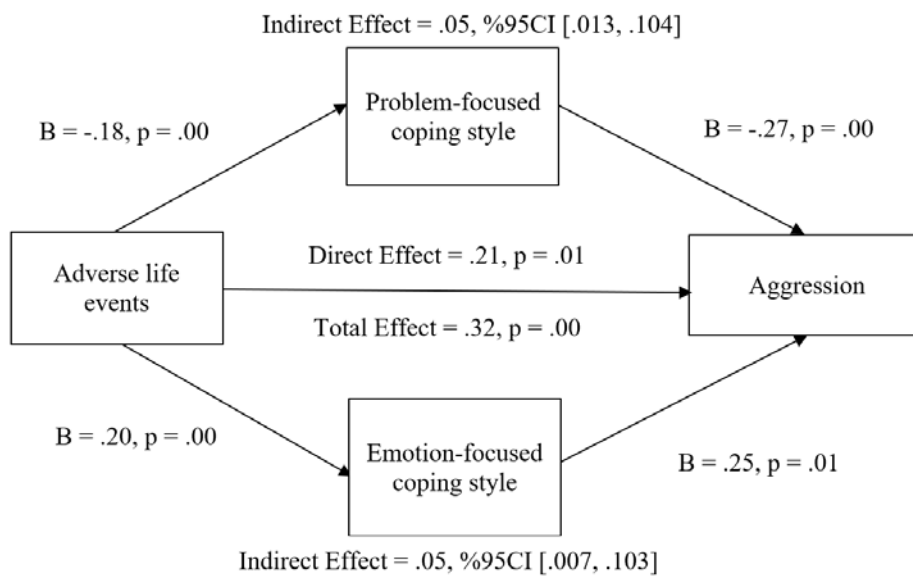


Figure 1. The parallel mediating role of coping styles between adverse life events and aggression

Note: Non-standardized beta coefficients and confidence intervals are given in the figure.

The results of the analysis were presented graphically in Figure 1, and all pathways among the main variables in the model were significant after considering covariates. According to the results, the total effect of adverse life events on aggression was significant (B = .32, SE = .07, p = .00). Also, adverse life events were related to problem-focused coping inversely (B = -.18, SE = .05, p = .00), and emotion-focused coping positively (B = .20, SE = .04, p = .00). Furthermore, problem-focused coping was associated with aggression negatively (B = -.27, SE = .09, p = .00), while emotion-focused coping was related to aggression positively (B = .25, SE = .10, p = .01). When the mediating roles of coping styles were examined, adverse life events were significantly associated with aggression through problem-focused coping (B = .05, SE = .02, %95CI = [.013, .104]). At the same time, the indirect effect of emotion-focused coping between adverse life events and aggression was significant (B = .05, SE = .02, %95CI = [.007, .103]). In other words, when the effects of age and gender were controlled, both coping styles played partial mediating roles between adverse life events and aggression. When the mediator variables were entered

into the model, the direct effect of adverse life events on aggression was significant ($B = .21$, $SE = .08$, $p = .01$). The hypothesized parallel mediation model was statistically significant [$F(5,310) = 11.58$, $p = .00$]. The explained total variance increased from 11% to 16% with two mediators. For control variables, gender was related to aggression significantly ($B = 6.60$, $SE = 1.32$, $p = .00$), but age did not ($B = -.15$, $SE = .21$, $p = .48$). The entirety of the regression coefficient outcomes for the mediation model can be observed in Table 3.

Table 3. Regression coefficients for the mediation model						
Problem-focused coping style						
Predictor(s)	B	SE	t	p	%95 Bca CI	
					Lower	Upper
Adverse life events	-.18	.05	-3.96	.00	-.27	-.09
Age	.12	.13	.90	.37	-.14	.38
Gender	1.77	.83	2.12	.03	0.13	3.41
Emotion-focused coping style						
Predictor(s)	B	SE	t	p	%95 Bca CI	
					Lower	Upper
Adverse life events	.20	.04	4.90	.00	.12	.28
Age	-.21	.12	-1.83	.07	-.44	.02
Gender	-.94	.74	-1.28	.20	-2.38	.51
Aggression						
Predictor(s)	B	SE	t	p	%95 Bca CI	
					Lower	Upper
Total Effect						
Adverse life events	.31	.07	4.24	.00	.17	.46
Age	-.23	.21	-1.09	.27	-.65	.19
Gender	5.88	1.34	4.39	.00	3.24	8.52
Indirect Effects						
ALE → P-F coping	-.27	.09	-3.02	.00	-.45	-.09
ALE → E-F coping	.25	.10	2.48	.01	.05	.45
Direct Effect						
ALE → P-F & E-F coping	.21	.08	2.81	.01	.06	.36
Age	-.15	.21	-.70	.48	-.56	.26
Gender	6.60	1.32	5.01	.00	4.01	9.20

: ALE= Adverse life events; P-F Coping= Problem-focused coping style; E-F Coping= Emotion-focused coping style; %95 Bca= Bias-Corrected and Accelerated; CI=Confidence Interval; SE: Standard error

Discussion

In the current study, first of all, differences between aggression and coping with stress were examined in male and female university students regarding positive and adverse life events. Afterward, the mediating role of coping styles in the relationship between adverse life events and aggression was investigated. Results indicated that individuals who experienced more adverse life events had higher aggression scores compared to those who experienced more positive life events. Males had higher aggression scores than females. Students who reported more positive life events used a more problem-focused coping style, while students who had more adverse life events used a more emotion-focused coping style. Based on the model analysis results, adverse life events were positively associated with aggression. Also, both coping styles had a partial parallel mediating role in the relationship between adverse life events and aggression.

The results of the study indicated that males demonstrated higher levels of aggression than females. This result is consistent with the General Aggression Model, which suggests that while gender differences are not typically observed in general aggression behaviors, they present differences in physical and indirect aggression types (Anderson and Bushman 2002). In support of this finding, previous research has demonstrated that males tend to have higher scores of total aggression, particularly under conditions of academic pressure, compared to females (Huang et al. 2017). Additionally, males exhibit more physical and verbal aggression than females (Çelik and Onat-Kocabiyyık 2014, Björkqvist 2018), as well as higher rates of destructive and passive aggression (Hasta and Güler 2013). Explanations for these gender differences in aggression include prenatal exposure to hormones (Bailey and Hurd 2005, Coyne et al. 2007), or the influence of social learning, which offers aggression is learned through observation and imitation of aggressive behaviors, particularly among males, due to gender roles (Bandura et al. 1961, Thomas 2003). The effect of gender roles seems to be important in understanding the gender difference in aggressive behavior. The causes and meanings of the aggressive behaviors of males and females could be shaped on the basis that males are expected to behave more aggressively (Demirtaş-Madran

2020). However, attitudes and beliefs about aggression are shaped differently by culture. National origin and cultural factors also seem to be important in explaining aggression (Richardson and Hammock 2007). It is crucial to acknowledge that gender and aggression relations are complex and multifaceted, and that a range of perspectives and specific types of aggression must be considered to fully understand and interpret patterns of aggressive behavior.

In the current study, university students who experienced higher levels of adverse life events tended to use a more emotion-focused coping style with stress, while those who experienced high levels of positive life events tended to use a problem-focused coping style more. The current result is consistent with the Interactional Stress and Coping Theory (Lazarus and Folkman 1984), which posits that individuals tend to prefer problem-focused coping since they see the consequences of life events under their control, and they are more inclined to emotion-focused coping since they perceive they may not control these consequences. In the current study, students evaluated the extent to which life events they experienced had a positive or adverse effect on them. It appears that students who perceived the impact of such events as being positive were more inclined to use problem-focused coping strategies, as they believed the outcomes of these events to be more controllable and changeable. Conversely, those who considered the outcomes of these events to be uncontrollable and unchangeable tended to use emotion-focused coping strategies more. Besides, studies indicate that emotion-focused coping style shows positive correlation with stress (Hancıoğlu 2017), and increases tension by leaving problems unresolved (Ito and Brotheridge 2003). In contrast, problem-focused coping styles appeared to be negatively correlated with stress (Hobfoll et al. 1994, Hancıoğlu 2017), and associated with positive therapeutic effect on stress-related health problems (Chan et al. 2006).

General Aggression Model assumes that numerous individual and environmental factors contribute to the emergence of aggression (Anderson and Bushman 2002). This model proposes that aggressive behavior emerges as a result of the unified effect of various combinations of these factors. One of the environmental circumstances that promote aggression is adverse life events that are distressing and unpleasant (Anderson and Bushman 2002, Anderson et al. 2008, DeWall et al. 2011). Adverse life experiences have been identified as important predictors of both self-directed harm, such as suicide (Liu and Tein 2005), and aggressive behaviors directed towards others, such as peer bullying (Connell et al. 2016), violence (Gelaye et al. 2008), and aggression (Yang et al. 2023). Consistent with the literature, adverse life events were positively related to aggression in the present study. Adverse life events are undesirable occurrences that are perceived as unpleasant, out of control, and unpredictable (Sarason et al. 1978). For university students, significant life events include leaving their families and entering new environments, starting a job, or experiencing changes in close relationships. These changes encountered in this developmental period of life impact individuals differently. University students who experienced more adverse life events had higher aggression scores than those with more positive life events. As expected, this result is consistent with previous research that revealed adverse life events (such as failure or deterioration in relationships with friends) encountered during the academic education process lead to the emergence of aggressive behaviors such as peer bullying and violence (Gelaye et al. 2008, Connell et al. 2016, Brown et al. 2017, Huang et al. 2017).

The coping styles individuals use for managing stress represent their resources for overcoming the effects of stressful events (Folkman and Lazarus 1980). Results of the main model analysis in the present study indicate that experiencing adverse life events and using a more emotion-focused coping style played a role in increasing aggression, while using a more problem-focused coping style played a role in decreasing aggression. These coping styles partially mediated the relationship between adverse life events and aggression. This partial mediation role indicates that adverse life events are directly and positively associated with the level of aggression, and via higher use of emotion-focused or less use of problem-focused coping, they are indirectly related to aggression positively. This finding is consistent with Interactional Stress and Coping Theory and research hypotheses. Regarding the relationship between coping styles and aggression (Maxwell and Siu 2008, Carlo et al. 2012, Whitman and Gottdiener 2015), individuals might not all the time behave passively to handle stress arising from adverse life events; instead, they might employ coping strategies to manage these stressors (Lazarus and Folkman, 1984). In the cognitive evaluation of coping, primary appraisal which includes the perception of threat, challenge and harm from internal and external demands, and secondary appraisal, in which the adequacy of coping resources is assessed for dealing with the event, show that individuals play an active role when facing various life events. They can shape whether they exhibit harmful behaviors towards others by using active coping strategies and avoiding passive coping after adverse life events.

Adverse life events are often accompanied by specific coping strategies based on the results of the main model analysis. Emotion-focused coping styles, which involve reactions such as avoidance, surrender, and helplessness,

can reduce control, leave problems unresolved, and contribute to tension (Ito and Brotheridge 2013). On the other hand, problem-focused coping facilitates adaptation to changes brought about by life events (Benus et al. 1991), by increasing individuals' belief in their ability to control and change the consequences of such events and by encouraging constructive and direct approaches to problem-solving, such as defining the problem and seeking support (Folkman and Lazarus 1980). Therefore, problem-focused coping acts as a protective factor against harmful and dysfunctional results such as aggression. The tendency to perceive events more negatively increases the use of emotion-focused coping, decreases the use of problem-focused coping style, and thus mediates the occurrence of negative behaviors such as aggression. When confronted with an adverse and stressful event, an individual perceives it as being uncontrollable and unchangeable, leading to the use of avoidant and emotion-focused coping style rather than problem-focused coping (Folkman, 1984). Moreover, the use of emotion-focused, and dysfunctional coping strategies in the face of stressful life events is also associated with negative outcomes such as relapse to substance use and increased depressive and schizophrenic symptoms (Anderson et al. 2006, Lewis et al. 2015, Wang et al. 2021). This study demonstrated that experiencing adverse life events contributes to aggression through using excessive emotion-focused coping and less problem-focused coping style. So, enhancing effective coping styles will help to mitigate the link between adverse life events and aggression.

Overall, this study represents a pioneering effort to demonstrate the mediating effect of coping styles in the association between adverse life events and aggression, thereby advancing our understanding in this field. To the best of our knowledge, a review of the literature did not reveal any similar studies. However, it should be noted that the limitations of this study should be taken into consideration when interpreting the results. The measures used in this study are self-reported scales, and participants may have given responses that they believed were socially desirable. Therefore, future studies should consider this when working with individuals who display violent behavior. Another limitation of this study is that the life events were specific to the period in which the students lived, as the sample consisted of university students. There were no questions about stressful events that would belong to other developmental stages, such as business life, job loss, marriage, and childcare. Therefore, it should be noted that this study only investigated the relationship between positive and adverse life events specific to the period in which university students lived, and their coping styles with stress and aggression. Future research could replicate this study with similar variables in adults over 35 and individuals in late adulthood. Additionally, the effect of different types of life events on aggression in terms of gender could be explored. In future studies within the framework of the General Aggression Model, it is recommended to test a comprehensive model with variables selected from other dimensions of the model (attitude towards gender roles, self-esteem, internal and external locus of control, alcohol and substance use, personality traits). Another limitation to keep in mind is that the current study was a cross-sectional study; future longitudinal studies are needed to better reveal the mediators and moderators of the dynamic link between adverse life events, aggression, and coping strategies. Potential mediators for further exploration in understanding the complex relation between adverse life events and aggression may be suggested as personality traits, trait anger, perceived life satisfaction, childhood traumas, negative affect, impulsivity, and psychological well-being. In addition, a similar study may be conducted in different groups diagnosed with major depressive disorder, schizophrenia, alcohol and substance use disorders in the future. Finally, aggression was measured as attitude in this study; therefore, behavioral scales that inquire about recent aggressive behaviors are recommended to be included in future studies.

Conclusion

University life covers the important years in the transition to emerging adulthood after adolescence. During this period, students are involved in new areas of life, strive for academic development, leave their families to become individualized, and work while studying-in short, they begin to start life. Changes in relationships with parents, social interactions, economic conditions, and sexuality are important areas in which development and exploration occur during this period. All of these changes and accompanying life events may increase the emotional stress level of university students depending on whether they perceive these events as adverse or not (e.g., Jackson and Finney 2002). Negative evaluations of events increase the likelihood of experiencing stress (Aksöz-Efe 2018). Persistent and cumulative experiences of perceived stress and ineffective coping with adverse life events pose a risk factor for mental health issues in university students (Tavolacci et al. 2013, Tang et al. 2015, Mosallam and Thabet 2016). Furthermore, the results of the present study demonstrated that evaluating the level of life events as adverse and selecting coping strategies were associated with the likelihood of aggressive behavior in emerging adults after controlling for gender and age. Hereby, this result provides significant clinical implications for counseling.

The current results recommend that not only the level of adverse life events but also the type of coping strategies of emerging adults should be assessed at the same time in counseling. Considering these factors together is preventive for self-directed harm (e.g., suicide) and especially aggressive behavior towards others (e.g., physical violence) in clinical interventions. Strengthening problem-focused coping skills (increasing self-confidence and optimistic attitudes, also seeking social support) will be effective in mitigating negative behavioral outcomes when addressing stressful life events. Accordingly, mental health professionals may use problem reframing approaches, in which viewing a problem from different perspectives can help individuals find new solutions and develop a more constructive outlook. Hence, this approach reduces the individual's avoidance of the problem, which is one of the emotion-focused coping styles. Additionally, these professionals support clients by tapping into available social support resources.

The present study showed that problem-focused coping style mitigates negative outcomes when coping with adverse life events. This coping style appears as the individual's active effort to solve the events and overcome them in a short period (Kim et al. 2003, Clarke 2006, Hancıoğlu 2017). This study also revealed that using an emotion-focused coping style, which includes helpless and submissive approach, to cope with adverse life events is associated with negative outcomes, such as aggression. Using an emotion-focused coping style inhibits problem-solving, causes persistent tension and the emergence of harmful behaviors. Therefore, individual (e.g., psychoeducation) and group-based structured intervention programs aimed at addressing the specific needs of emerging adults and enhancing problem-focused and adaptive coping strategies, while also preventing maladaptive coping styles, can be beneficial in averting negative behavioral outcomes such as aggression. In this context, recent studies have demonstrated that adaptive coping strategies are strongly correlated with the psychological well-being of university students (Freire et al. 2016), whereas maladaptive coping strategies are linked to mental health issues in university students (Sawhney et al. 2020) and are related to increased depressive symptoms in adulthood (Yeşiloğlu et al. 2023). The literature also supports the idea that intervention programs designed to enhance coping skills, for instance Coping Effectiveness Training Programme, offer protection against depression, anxiety, and emotional stress following major life events (e.g., spinal cord injury and, being diagnosed with HIV) (Chesney et al. 2003, Kennedy et al. 2003). These insights are valuable for mental health counselors involved in providing support to university students and clients experiencing adverse life events, because understanding an individual's effective coping resources may play a key role in preventing harmful consequences.

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