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# Psychological resilience and valued living as mediators in the relation between moral injury and attitudes toward future among Turkish adults

Feyza Topçu<sup>1\*</sup>

## Abstract

**Background** Moral injury exacerbates poor outcomes, such as negative attitudes toward the future; however, the potential underlying mechanisms of this association remain unknown. This present study aimed to disentangle the pathways linking moral injury to confidence toward the future through the serial mediation effect of psychological resilience and valued living in a Turkish population.

**Methods** The data analyzed were collected from representative samples of adult aged 18–65 years living in Gaziantep Province, Turkey. A total of 681 participants (77.7% female, mean age = 25.05) were included in this study. Structural equation modeling (SEM) was used to analyze the relationships among the variables.

**Results** Indirect effects of moral injury on confidence toward the future were found. The direct effect of moral injury on attitudes toward the future in the presence of mediators was not significant ( $b = 0.014, p > 0.05$ ). Thus, we concluded that there was a fully serial mediation by psychological resilience and valued living in the relationship between moral injury and attitudes toward the future ( $b = -0.077$ , 95% bootstrap CI:  $-0.115$  to  $-0.048$ ).

**Limitations** The main constraint of this study was its cross-sectional design, which restricted the capacity for causal inference.

**Conclusions** These findings highlight the role of psychological resilience and valued living as serial mediators in the relationship between moral injury and confidence toward the future. Therefore, mental health professionals or clinicians incorporating intervention programs aimed at enhancing psychological resilience and promoting valued living could be beneficial, especially for individuals who have experienced moral injuries. Employing a multifaceted therapeutic approach may be advantageous in addressing these concerns.

**Keywords** Moral injury, Confidence toward the future, Psychological resilience, Valued living

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## Introduction

Moral injury (MI) is a well-established psychological concept that has been recognized for a considerable period of time. Although it is a relatively recent addition to the field of psychology, it is not a new concept. Since the beginning of humanity, moral injury has existed due to consistently held moral and ethical beliefs and values that can be violated or compromised. Throughout history, following wars or other severe traumas, religious and spiritual rituals have commonly been used to address and treat moral concerns, often administered by the clergy [1]. Johnathan Shay first defined the idea of moral injury as a “character wounds” resulting from a leader’s betrayal, using examples from his clinical experiences, specifically with Vietnam Veterans [2]. Since Shay introduced this concept, scholars have investigated the causes, composition, and consequences of moral injury. More research has been conducted in the last 10 years, as studies have revealed that moral injury differs from trauma and other psychiatric illnesses [3].

Individuals who experience moral injury exhibit distinct responses compared to those who experience trauma [4]. Unlike post-traumatic stress disorder (PTSD), moral injury is characterized more by shame and guilt than fear and anxiety [5]. People who experience moral injury also experience psychological difficulties. Moral injuries have been reported to result from self-harming behaviors, suicide, PTSD, and depression [3, 6, 7]. The core symptoms of PTSD include reexperiencing/intrusive symptoms, avoidance, and hypervigilance or hyperarousal. In contrast, moral injury presents a different scenario. Far from being a protracted expression of hyperphysiological responses to perceptions of life threat and subsequent activation of fear responses, it is instead the result of deep moral conflict, in which one’s actions or the actions of trusted individuals are interpreted as violations of strongly held ethical or spiritual values. Unlike PTSD, moral injury does not involve heightened arousal. Instead, it is characterized by feelings of guilt, shame, spiritual crises, depression, demoralization, and self-handicapping. While both conditions are linked to anxiety, anger, substance abuse, flashbacks, and avoidance behaviors, the nature of these symptoms differs. For example, PTSD sufferers experience a recurrence of life-threatening fear, while those with moral injury revisit events that triggered perceived ethical dilemmas. Anxiety associated with PTSD is primarily physiological, whereas moral injury-related anxiety is theoretically linked to concerns about existence and meaning [8]. This distinction emphasizes the need for customizable interventions that address the specific emotional and psychological dimensions of moral injury. In addition, it is stated that after moral injury, people experience changes in their perspectives on themselves, others, and the world; their

confidence in the future is damaged; and they begin to view the future more pessimistically and with greater hopelessness [9]. Uncovering the potential mechanisms to reduce the possible negative consequences of moral injury is important for both the physical and mental health of individuals.

Moral injury can significantly impact an individual’s behavioral activity. Those who experience this kind of injury may withdraw from others and life endeavors as a form of “punishment” or to avoid harming others. Consequently, individuals may no longer feel deserving of living in accordance with their values [10]. Optimism, engaging in activities that elicit positive emotions, and valued living are critical in preventing and treating the potential negative consequences of moral injury. This can be explained by Frederickson’s [11] broaden-and-build theory. The basis of this theory is that positive emotions increase people’s mental resources allowing them to develop a broader repertoire of thinking and behavior. Engaging in activities and exercises that promote positive emotions improves cognitive abilities and eliminates negative emotional arousal. Consequently, emotions, thoughts, and behaviors change permanently in a positive manner [12]. This positivity is a natural antidote to the symptoms of worthlessness and hopelessness found in shame and can help the morally injurious recover from depressive attribution, where personal action seems inadequate and misery seems endless [13]. Furthermore, this promotes psychological resilience among the students. Individuals with high psychological resilience are more likely to experience more positive emotions, be more optimistic, have higher behavioral activation, live a value-oriented life, and have more faith in the future.

In recent years, studies on moral injury have increased [14, 15]. To date, studies on moral injury have been conducted across many different occupational groups, especially in recent years, especially in soldiers and veterans [7, 9, 16, 17]. However, Currier et al. [18] and Williamson et al. [19] highlighted the spread of moral injury to the non-military population outside of a specific occupational group and the need to approach moral injury from a broader public health perspective. This study addresses this gap by examining moral injury in the general population. Therefore, based on the Frederickson’s Broaden and Build Theory, we hypothesize that when someone who has experienced moral injury remains committed to their values, they feel more positive emotions and their positive belief in the future will be reinforced, buffering the negative relationship between moral injury and confidence toward the future.

### The potential mediating role of resilience and valued living

Psychological resilience, the capacity to cope well with challenging experiences, is crucial for navigating

everyday stressors and more severe situations [20]. Resilient individuals maintain a positive outlook towards the future and remain steady despite adversity [21]. At the same time, people with strong psychological resilience maintain a valued living even if they have difficulties, compared to those with low psychological resilience [22]. Intervention studies designed to enhance the psychological resilience of individuals who have previously experienced moral injury have revealed that these individuals exhibit increased value-oriented lives in both post-experiment and follow-up studies. They are able to find meaning in their lives, their self-confidence and faith in the world have increased, and they remain more optimistic [23, 24]. Several studies have explored the role of psychological resilience as a moderator in the relationship between moral injury events and adolescent psychopathology, specifically focusing on the outcomes of depression and anxiety symptoms. The results suggest that high levels of psychological resilience in adolescents may help mitigate the impact of moral injury on the development of more internalized symptoms. Adolescents with low resilience reported higher levels of moral injury, which were associated with more internalizing symptoms. This finding implies that resilience may have a protective role and should not be underestimated when examining the relationship between moral injury and mental health among adolescents [25].

Other studies have shown that following moral injury, people become more distanced from their values and committed actions [10, 24]. Coping with and managing moral pain using dysfunctional methods often results in greater pain [25]. This pain involves living inside stories of moral injury, abandoning values, and not committing to actions [24]. People who experience moral injury think that they are bad and that they do not deserve any goodness and beauty [26], which causes them to live a life away from their values. This manifests in situations such as suicide and depression [27]. From this perspective, it is important to examine the role of psychological resilience and a value-oriented life to reveal the variables that may affect negative outcomes, such as giving up hope for the future of people who experience moral injury and suffer from this process.

In particular, studies on psychological resilience and moral injury are insufficient [28]. The present study sought to address this gap in the literature by exploring the potential mediating roles of psychological resilience and valued living in the relationship between moral injury and attitudes toward the future.

### The present study

There is extensive research on the relationship between moral injury and negative health outcomes. However, the mechanisms of moral injury research remain unclear

[3]. Given the long-term psychological risks associated with moral injury experiences, it is important to identify factors that can reduce these risks to develop targeted interventions for those who experience moral injury. Psychological resilience and valued living are mental health outcomes. Based on previous research demonstrating that psychological resilience buffers the relationship between moral injury and psychological health [28], and that valued living has been widely used in the treatment of moral injuries in recent years [24], we hypothesized that psychological resilience and valued living would have a mediating effect on the relationship between moral injury and attitudes toward the future. Elucidating how psychological resilience and valued living may buffer mental health in response to adversity related to the moral context is promising for preventing the possible negative consequences of moral injury and may inform the development of targeted prevention and intervention efforts for individuals with a history of moral injury.

The study proposed a serial mediation model, with the following hypothesis: Psychological resilience and valued living serially mediated the relationship between moral injury and attitudes toward the future. Therefore, the purpose of this study aimed to examine the relationship between moral injury and attitudes toward the future through the mediating roles of psychological resilience and valued living.

## Method

### Participants and procedures

We recruited 681 participants aged between 18 and 65 years using a criterion sampling method. This sampling method was selected due to its relevance to the research objective, as the survey respondents must have moral injury experiences. At the beginning of the study, participants were informed about moral injury and those who had experienced such an event were asked to continue the study. This recruitment process was conducted across numerous online platforms, including X, and WhatsApp. Psychology students volunteered to support the researchers during the data-collection process. These students received bonus points in one course. After providing informed consent, participants answered survey questions using the Google Form platform between November and April 2023, typically spending approximately 10 min to complete the questionnaires. There were 681 participants between the ages of 18 and 65, of which 77.7% ( $N=529$ ) were female. Table 1 shows the demographic characteristics of the subjects. The study was approved by the ethics committee of the Hasan Kalyoncu University Graduate Education Institute, (approval number: E-97105791-050.01.01-46174). Written informed consent was obtained.

**Table 1** Descriptive analysis and pearson correlations for all variables ( $N=681$ )

	1	2	3	4	5	6
1. MI	-					
2. ELS	-0.355**	-				
3. AFS	-0.220**	0.589**	-			
4. CDRSSF	-0.252**	0.539**	0.536**	-		
5. Age	-0.216**	0.134**	-0.019	0.090*	-	
6. Gender	0.018	-0.030	-0.014	-0.208**	-0.113**	-
Range	0–56	16–80	21–105	0–40	18–65	
$\bar{X}$ (SD)	20.898 8.664	56.127 11.955	78.283 12.925	22.487 7.104	25.049 8.317	
Cronbach's $\alpha$	0.829	0.918	0.924	0.845		
Skewness	0.483	-0.216	-0.390	-0.125	-	
Kurtosis	1.236	0.181	0.706	0.321	-	

\*\* $p < 0.01$ , \* $p < 0.05$  MI = Moral Injury Scale, ELS = Engaged Living Scale, AFS = Attitudes toward Future Scale, CDRSSF = Connor-Davidson Resilience Scale Short Form, ( $\bar{X}$ ) = Mean, SD = Standard Deviations

## Measures

### Connor davidson resilience scale short form (CDRSSF)

Psychological resilience was tested using the short form of the Connor Davidson Resilience Scale developed by Connor and Davidson [29]. The Connor Davidson Resilience Scale Short Form (CDRSSF) was developed by Campbell-Sills ve Stein [30] and adapted into Turkish by Kaya and Odacı [31]. In addition, this scale has 10 items, with each item assessed on a five-point Likert scale ranging from 0 (not true at all) to 4 (true nearly all the time). The sum of the 10 items constitutes the total score, with a higher score indicating a higher level of psychological resilience. The CDRSSF has demonstrated high internal consistency ( $\alpha=0.85$ ). In this study, the Cronbach's alpha coefficient was also 0.85.

### Moral injury scale

The Moral Injury Scale [MI; 32] adapted into Turkish by Tunç et al. [33], consists of 14 items in a 5-point Likert type format that measure moral injury. Respondents rate each symptom on a scale ranging from 0 (strongly disagree) to 4 (strongly agree) and a higher score indicates a higher level of experience with moral injury. The MI demonstrates good internal consistency which is 0.90. In this study, the total score Cronbach's alpha coefficient was calculated as 0.78.

### Attitudes toward future scale

The Attitudes toward Future Scale (AFS) was developed by Bodur and Harmancı-Seren [34] and consists of 21 items with a five-point Likert-type scoring system (1: completely disagree and 5: absolutely agree). High scores on the scale indicate a more positive attitude toward the future. The Cronbach's alpha internal consistency coefficient for the scale is 0.91. In this study, the total score Cronbach's alpha coefficient was calculated as 0.92.

### Engaged living scale

The Engaged Living Scale [ELS; 35] is a 16-item scale that measures a value-oriented life and was adapted into Turkish by Işık and Bilge [36]. Respondents rate items on a scale from 1 (completely disagree) to 5 (completely agree). Higher scores indicate higher levels of valued living and life satisfaction. The Cronbach's alpha internal consistency coefficient for the scale is 0.90. In this study, the total score Cronbach's alpha coefficient was calculated as 0.92.

### Data analyses

The research concluded with a total of 694 collected data points. However, 13 responses containing outliers were excluded from the study. These outliers were identified through Z-score calculations, with values falling outside the  $-3$  to  $+3$  range being removed. Consequently, 681 data were included in the final analysis. Checking whether the dataset follows a normal distribution is important for choosing the appropriate statistical analysis. We used kurtosis and skewness values to examine whether all the observed variables followed a normal distribution. All data analyses were conducted SPSS 23.0 and AMOS software. All statistical tests were two-tailed and  $p$ -values  $\leq 0.05$  were considered statistically significant. Spearman correlations were computed between continuous variables using SPSS 23.0. Next, the variance inflation factor (VIF) was calculated to check whether the predictor variables were related to each other. A VIF value higher than 5 indicates multicollinearity between independent variables. In the present study, the VIF values for all predictors were between 1.151~1.519 (less than 5), indicating no serious multicollinearity problem. In addition, a decrease in the tolerance value indicates that there might be a multicollinearity problem. A tolerance value lower than 0.10 suggests multicollinearity. In this study, the tolerance for all predictors was between

0.658~0.868 (greater than 0.10), showing no multicollinearity problem.

A serial mediation model was used to explore the mediating roles of psychological resilience and valued living in the relationship between moral injury and attitudes toward the future. To assess the hypothesized serial multiple mediation model, we first evaluated the overall model fit and the direct and indirect effects using AMOS 21. We tested the roles of psychological resilience and valued living as mediators, controlling for gender, as mediators through SEM, which is a multivariate technique for examining relationships between variables. After finding significant aggregated indirect effects from AMOS, we conducted additional analyses to examine the individual indirect effects of the models using the PROCESS macro for SPSS [37]. We used the maximum likelihood estimation in AMOS and ordinary least square estimation in PROCESS, along with a bootstrapping method that involved 1000 samples at a 95% bias-corrected confidence interval (BC CI) throughout the statistical analyses.

## Result

### Descriptive analysis and pearson correlations for all variables

Table 1 shows the means, standard deviations, and ranges of all variables included in the mediation analysis. The distribution was evaluated in terms of kurtosis and skewness, and a normal curve was obtained [38]. Pearson's correlations were also computed. The results showed that moral injury was significantly negatively correlated with valued living, attitudes toward the future, and psychological resilience ( $p < 0.001$ ), whereas attitudes toward the future were positively correlated with valued living and psychological resilience ( $p < 0.001$ ), and psychological

resilience had a significant positive correlation with valued living ( $p < 0.001$ ).

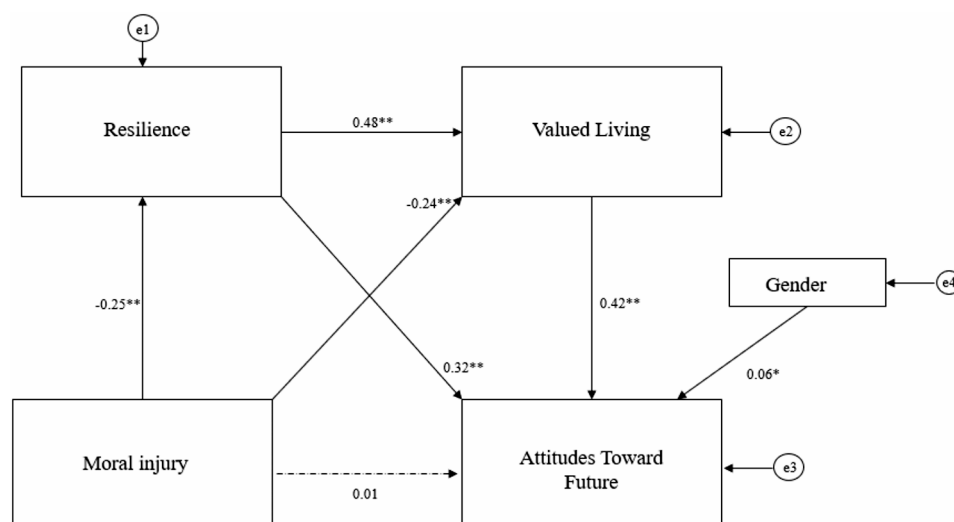
### Relationship between moral injury and attitude toward future: serial mediation model

The present model is an just identified model; therefore, there is no need to report the model fit. The findings of the model are presented in Figs. 1 and explained below.

The structural equation model included four latent variables: Resilience, Moral Injury, Valued Living, and Attitudes Toward Future. Each latent variable was represented by its corresponding scale. The individual items of each scale were observed as variables. Additionally, Gender was included as an observed exogenous variable. Measurement errors (e1, e2, e3, and e4) were modeled for each observed variable to account for unexplained variability.

The model testing process involved two statistical analyses. Initially, we evaluated the overall fit of the model and its direct and indirect effects using AMOS 21. However, the AMOS analysis only provided aggregated indirect effects of moral injury on attitudes toward the future, making it unclear whether the individual indirect effects via psychological resilience, valued living, or both psychological resilience and valued living were different from zero. To address this uncertainty, we used the PROCESS macro for SPSS [37] to compute the individual indirect effects of the variables.

The mediating effects of psychological resilience and valued living on the relationship between moral injury and attitudes toward the future were tested using bootstrapping procedures in IBM SPSS AMOS. Using the original dataset ( $N = 681$ ), 1000 bootstrap samples were generated using random sampling. The mediating effects of psychological resilience and valued living, along with



**Fig. 1** Indirect and direct effects of moral injury on attitudes toward future through psychological resilience and valued living.  $^*p < 0.05$ ,  $^{**}p < 0.001$

**Table 2** Unstandardized indirect effects of the serial multiple mediation models

Model	Unstandardized		%95 BC CI (1000 bootstrapping)	
	Effect	SE	Lower	Upper
MI CDRSSF AFS	-0.121	0.028	-0.179	-0.067
MI ELS AFS	-0.145	0.030	-0.210	-0.092
MI CDRSSF ELS AFS	-0.077	0.018	-0.115	-0.048

MI=Moral Injury Scale, ELS=Engaged Living Scale, AFS=Attitudes toward Future Scale, CDRSSF=Connor-Davidson Resilience Scale Short Form

their associated 95% confidence intervals, are presented in Table 2. The 95% CI values of the indirect effects of moral injury on attitudes toward the future indicated that psychological resilience and valued living fully mediated the relationship between moral injury and attitudes toward the future.

Several significant direct and indirect effects were identified. Moral injury had a significant impact on psychological resilience ( $b = -0.204$ ,  $t = 6.840$ ,  $p < 0.001$ ) and valued living ( $b = -0.320$ ,  $t = 7.217$ ,  $p < 0.001$ ). Gender had a significant impact on attitude toward the future ( $b = 2.041$ ,  $t = 2.184$ ,  $p < 0.05$ ). Psychological resilience significantly impacted valued living ( $b = 0.835$ ,  $t = 15.116$ ,  $p < 0.001$ ) and attitudes toward the future ( $b = 0.594$ ,  $t = 9.102$ ,  $p < 0.001$ ). Valued living had a significant effect on attitudes toward the future ( $b = 0.453$ ,  $t = 11.555$ ,  $p < 0.001$ ). However, moral injury had no significant direct effect on attitudes toward the future ( $b = 0.016$ ,  $t = 0.330$ ,  $p > 0.05$ ).

The results revealed a significant indirect effect of moral injury on attitudes toward the future through psychological resilience and valued living ( $b = -0.077$ ,  $p < 0.001$ ), supporting H1. The direct effect of moral injury on attitudes toward the future in the presence of mediators was not significant ( $b = 0.016$ ,  $p > 0.05$ ); therefore we concluded that there was a fully serial mediation of psychological resilience and valued living on the relationship between moral injury and attitudes toward the future.

The results showed that the total effect model was significant,  $F(2, 678) = 17.251$ ,  $b = -0.328$ ,  $R^2 = 0.05$ ,  $p < 0.001$ , and all three indirect effects differed from zero (Table 2). Moral injury had a significant negative association with attitudes toward the future through psychological resilience and attitudes toward the future. In addition, one unit increase in moral injury resulted in a 0.08 decrease in attitudes toward the future through the two serial mediators. The mediation summary is presented in Table 2.

## Discussion

Using a representative sample of Turkish college students, we investigated the mediating mechanism linking moral injury and attitudes toward the future. The current

study found that moral injury predicted decreased psychological resilience and valued living. Consistent with our hypothesis, psychological resilience and valued living mediated the relationship between moral injury and attitudes toward the future. Moreover, this relationship was fully mediated. The direct effect of moral injury on attitudes toward the future in the presence of mediators was not significant. To our knowledge, this is a rare study that systematically evaluates psychological resilience and valued living in the mediation analysis of the relationship between moral injury and confidence toward the future.

Previous research has demonstrated a negative correlation between moral injury and psychological resilience [39]. The correlation between moral injury and resilience was significantly negative, indicating that as one increased, the other decreased. This result aligns with prior research suggesting that moral injury and psychological resilience can be considered two opposing ends of a spectrum [40]. Moral injury is defined as the experience of guilt and shame in response to emotionally and morally challenging situations, which is comparable to psychological resilience or the ability to positively adapt to adversity and display strength in the face of it [41]. People who experience moral injury also experience burnout, along with feelings of guilt and shame [42]. Burnout can make people feel more depressed [43] and reduce their ability to cope with difficulties [44].

People who experience moral injury move away from their values as they show symptoms such as self-disgust, thinking that they do not deserve beauty, and are unable to live up to their values [14, 45]. Those who experience high levels of pain may lose joy, hope, and joy in life, with the intensity of all these emotions decreasing over time [45]. People who experience moral injury may feel as if they have lost their innocence and identity because of the inconsistency between their beliefs, values, and actions. This dissonance can damage their sense of identity, self-worth, and values, and life can begin to feel meaningless. They may have difficulty finding meaning [46]. This may cause a person to move away from the values they cherish in their lives [10]. In addition, recent research suggests that valued living is a healing resource for treating moral injury [10, 24]. Working towards building regular, values-focused behavioral patterns outside work is essential for cultivating opportunities to recharge and recuperate. This, in turn, allows patients a greater capacity to cope with an inherently stressful and challenging work environment [47].

Following moral injury, people may experience changes in their emotions, thoughts, beliefs, relationships, and behaviors. There may be changes in one's perspective on oneself, other people, and life, thus affecting confidence in the future [9]. Individuals also experience burnout following moral injury [48]. Burnout negatively

impacts adaptability to current circumstances and creates a perception of a chaotic, fragile, and risky future [49]. However, this relationship disappeared when the two mediating variables were added. This highlights the importance of strengthening psychological resilience and promoting value-oriented living to prevent the possible negative consequences of moral injury. People with strong psychological resilience can look to the future more optimistically in the face of moral injury, do not lose hope, and continue to committed action with their values even when they are challenged. In addition, staying strong in the face of adversity makes it possible not to give up after negative events and to live a value-oriented life [50]. Valued living increases behavioral activation by experiencing positive emotions more frequently, thus playing a role in protecting mental health [11, 51, 52]. By including psychological resilience and valued living as mediators, morally injured individuals are less likely to have their confidence damaged in the future. In conclusion, this study is important in terms of explaining the mechanism that buffers the relationship between moral injury and confidence in the future and addressing these two gaps in the literature in terms of the population sample.

### Practical implications

If these findings are robust, they have significant clinical implications. For practical applications, our findings suggest that mental health professionals should be concerned about potentially morally injurious events in their clients. International literature suggests that moral injury may be an important public health concern. However, there are currently no approved treatments for moral injury. Treating patients with mental health problems resulting from moral injury can be challenging for clinicians [19]. Mental health professionals should consider integrating psychological resilience-building exercises and valued living into their intervention programs to assist individuals in facing and overcoming challenges (such as guilt, shame, and remorse). It is important to help individuals integrate these values into their lives by revealing their violated values and supporting them in experiencing positive emotions through behavioral activation. Guiding people to express their values through their behavior positively impacts their overall well-being. Adopting a value-oriented lifestyle can contribute to mental health, which is related to confidence in the future.

### Strengths, limitations and future research

This study had several strengths. First, to the best of our knowledge, this is a rare study that tested the mediating role of psychological resilience and valued living underlying the association between moral injury and confidence toward the future. Moral injury is associated with various

adverse health outcomes. Previous research underscores the importance of understanding the potential mechanisms underlying the relationship between moral injury and negative outcomes [3]. One of the strengths of this study is that it obtained results regarding this mechanism. Our findings may help identify adults experiencing moral injury as targets for intervention and prevention to reduce such negative outcomes. In particular, behavioral activation can be used as a treatment approach for morally injurious events. Of course, treatment will require other interventions besides promoting valued living (e.g., self-compassion practices for forgiving oneself/others) [10].

In the literature, most studies on moral injury have been conducted on soldiers and have used a cross-sectional design [15]. Therefore, further studies with different samples and designs are required. Community-oriented studies are required, particularly public health. Future work on moral injury highlights the importance of extending moral injury to non-military populations and approaching it from a broader public health perspective. By integrating evidence-based methods and therapies with a broader public health perspective, there is significant potential to improve healing for those with moral injury, prevent it in those who may be at risk, and foster psychosocial and moral growth in all individuals who may be impacted by it [18]. Therefore, the second strength of this study is that moral injury was investigated in a community setting. In addition, this study did not analyze the types of moral injury events that occurred. Other researchers can conduct research by considering these differences.

Our study had certain limitations. First, this was a cross-sectional study, and the results cannot inform the causality between variables. Therefore, the first limitation of the present study is the possibility of unmeasured third variables that could influence the observed relationships. For instance, variables such as social support levels might partially account for the associations between moral injury, resilience, valued living, and attitudes toward the future. Social support may moderate or mediate the relationships observed in this model. A robust social support system may buffer the severity of emotional distress caused by moral injury [53]. This could enhance psychological resilience in affected individuals, potentially due to the strong resources available within their social environment. Future studies should measure and incorporate social support as a potential confounding factor. Future research should aim to measure and control for these potential confounding factors to enhance the validity of these findings. Furthermore, reverse paths or other mediators may exist in this model. Therefore, intervention and prevention strategies should be implemented with caution, considering the potential for reverse paths or other

mediators in the model. To better understand current-focused mechanisms, future longitudinal or experimental studies are necessary to investigate these relationships. This study was constrained by the use of self-reported measures. Future research should explore alternative approaches to assess value-oriented life. For example, utilizing methods such as the Ecological Momentary Assessment, which captures daily life changes, may offer a clearer understanding of the connection between moral injury, psychological resilience, valued living, and confidence toward the future. Third, the study was conducted with a limited sample of 681 individuals aged between 18 and 65 in Turkey. Given that most participants were in the 25 years age group, future versions of this study could involve older demographics. Although our research primarily involved female participants, despite controlling for gender, future studies should focus on examining male groups as well. Subsequently, it may be useful to develop an objective moral injury scale specific to Turkish culture, as it is currently inadequate.

## Conclusions

In recent years, research on moral injury has increased. However, studies on moral injury need to be conducted not only on soldiers or veterans but also on community-based public health research. Psychological resilience and value-oriented living can serve as a bridge to reduce the negative outcomes of moral injury, such as damaged confidence in the future. The mediation model revealed a possible role of psychological resilience and valued living in the relationship between moral injury and confidence toward the future. These findings underscore the need to identify and address symptoms of moral injury among adults, explaining the mechanism of the relationship between moral injury and confidence toward the future, with the target of reducing the risk of negative outcomes.

## Abbreviations

SEM	Structural equation modeling
MI	Moral injury
AFS	The Attitudes toward Future Scale
ELS	The Engaged Living Scale
PTSD	Post-traumatic stress disorder
CDRSSF	The Connor Davidson Resilience Scale Short Form

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## Author contributions

Feyza Topçu: Conceptualization, data collection, statistical analysis, data interpretation, manuscript preparation, writing—original draft.

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## Data availability

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

## Declarations

### Ethics approval and consent to participate

This study was performed in line with the principles of the Declaration of Helsinki, and was approved by the Ethics Review Committee of Hasan Kalyoncu University Graduate Education Institute (E-97105791-050.01.01-46174) in Gaziantep, Turkey. All participants provided consent after being informed of the aim of the research and their rights to refuse to participate.

### Consent for publication

Not applicable.

### Competing interests

The authors declare no competing interests.

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