

# The Relationship Between Negative Coping Styles, Psychological Resilience, and Positive Coping Styles in Military Personnel: A Cross-Lagged Analysis

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**Background:** Military personnel experience prolonged exposure to high-stress environments. Positive coping styles can assist in maintaining their mental and behavioral well-being, whereas negative coping styles cannot. Health behavior change theory specifies that an individual can transition from a negative to a positive coping style. The psychological resilience concept may prove vital in this transition.

**Methods:** In a longitudinal study design, two questionnaires were administered to 233 military personnel twice, the first at T1 in April 2023 and the second at T2 in July 2023. The questionnaire measured individual negative coping style, positive coping style and psychological resilience.

**Results:** The data showed that the negative coping style at T1 negatively predicted the level of psychological resilience at T2 ( $\gamma = -0.26$ ,  $p < 0.001$ ) and the positive coping style at T2 ( $\gamma = -0.16$ ,  $p < 0.001$ ). The level of psychological resilience at T1 positively predicted the positive coping style at T2 ( $\gamma = 0.22$ ,  $p < 0.01$ ). Psychological resilience played a mediating role between negative coping style and positive coping style. In addition, there was an interaction between psychological resilience and positive coping style in military personnel at the two time points.

**Conclusion:** The negative coping styles that presently exist among military personnel have the potential to diminish their future positive coping styles by lowering their psychological resilience. This highlights the need to focus on the development and training of psychological resilience for military personnel, as it can effectively counteract negative coping styles and promote positive coping styles.

**Keywords:** military personnel, coping style, resilience, cross-lagged analysis

## Introduction

### Different Coping Styles

Coping style refers to the cognitive and behavioral ways that individuals use to reduce their psychological distress when faced with stressful events and situations.<sup>1</sup> Researchers used factor analysis method to extract the common characteristics of all types of coping styles and divided them into positive and negative coping styles.<sup>2</sup> Positive coping styles reflect that individuals engage in some cognitive or behavioral strategies that can lead to positive outcomes when they encounter stress, such as changing cognition by deploying cognitive resources, actively solving problems or seeking social support from family and friends.<sup>3</sup> Negative coping styles reflect the tendency of individuals to adopt cognitive or behavioral strategies that can lead to negative outcomes when they encounter stress, such as cognitive avoidance, expression suppression and substance abuse.<sup>4</sup> The dual-factor model of mental health posits that life satisfaction and mental illness symptoms constitute crucial positive and negative indicators, respectively, for

diagnosing mental health condition.<sup>5</sup> Notably, the two coping styles have opposing influences on mental health condition across both positive and negative indicators.<sup>6–10</sup> For example, when an individual faces a stressful event of social rejection, positive coping style can reduce the impact of the stressful event and allow the individual to maintain a normal level of life satisfaction, while negative coping style will reduce life satisfaction.<sup>8</sup> When college students face negative life events (eg school bullying, poor grades), positive coping style can alleviate symptoms of depression, whereas negative coping style can worsen symptoms of depression.<sup>6</sup>

## The Transition from Negative to Positive Coping Styles

Previous studies have shown that negative and positive coping styles have different effects,<sup>8–10</sup> and the coping styles adopted by individuals are comprehensive, including both positive and negative aspects.<sup>2</sup> According to the theory of health behavior change,<sup>11</sup> negative coping style is an unfavorable factor in one's own psychological resources that can induce negative emotions and affect one's mental and physical health, while positive coping style is a desired factor that can promote mental and physical health and enhance one's life satisfaction. Besides, the theory also states that individuals have the ability to shift from negative to positive coping style. Namely, through certain external intervention or with the help of their own advantageous psychological resources, individuals can realize the change of health behavior.<sup>12</sup> This indicates a potential directional relationship between negative and positive coping styles, wherein an individual's pre-existing negative coping style could shift towards a positive coping style. Currently, it's not clear whether negative and positive coping styles interact or whether people switch from one to the other. And there is a lack of research exploring the relationship between the two coping styles. Thus, in this study, we used a longitudinal tracking design to explore the relationship between the two coping styles, assuming an interaction between the two coping styles.

## The Importance of Positive Coping Styles to the Mental Health of Military Personnel

Military personnel are a special group with special work content and high risk.<sup>13</sup> On the one hand, they have to face the harsh natural environment frequently, such as high altitude, heat, cold and low pressure. On the other hand, they also need to face the small, noisy and humid mechanical environments, for example, fighter jets, submarines, and armored vehicles. Special work environments often subject military personnel to high stress conditions.<sup>14</sup> These conditions include military and external training exercises, rescue and disaster relief missions, peace keeping missions, combat, coping with perceived threats, trauma exposure, and moral injury. These external factors make them become a high-risk group for mental diseases or disorders.<sup>15</sup> Additionally, military personnel are often separated from their family, and made to relocate frequently, which will make them experience more loneliness and lack feeling of belonging.<sup>16</sup> Therefore, positive coping styles are critical to maintaining the mental health of military personnel. Because they can help military personnel cope with environmental changes and regulate negative emotions and physical reactions to improve their life satisfaction and happiness.<sup>17</sup> So how to change the existing negative coping styles into positive coping styles is the most important issue in the maintenance of mental health of military personnel.<sup>18</sup>

## Psychological Resilience Promotes Transition into Health Behaviors

The theory of health behavior change emphasizes that an individual's existing advantageous mental resources are important for behavior change, such as psychological resilience.<sup>11,19</sup> Psychological resilience is a state formed by the interaction of internal and external risk and protective factors. It refers to an individual's quality of "being braver and more courageous" in difficult and stressful situations.<sup>20</sup> There are three ways to understand the concept of psychological resilience. Firstly, psychological resilience reflects an individual's ability to withstand adversity, that is, the individual's ability to transform adverse factors into positive factors for good development;<sup>21</sup> secondly, psychological resilience reflects an individual's ability to resist being exhausted by adverse factors;<sup>22</sup> and thirdly, psychological resilience reflects an individual's ability to return to normality following a catastrophic event.<sup>23</sup>

According to Richardson's model of psychological resilience,<sup>24</sup> an individual typically maintains a state of temporary physical, mental and psychological equilibrium, and the individual's pre-existing risk factors, such as cognitive or behavioral tendencies towards negative coping, interact with the protective factor of psychological resilience to determine whether the system is out of balance. If the equilibrium is broken, the individual's conscious or unconscious

field will reorganize. The reorganization results in the following four situations: (1) Psychological resilience reorganization, in which the individual's physiological-mental-psychological system forms a higher level of balance based on the restoration of the original level and develops better adaptive cognition or behavior; (2) Regressive reorganization, in response to risk factors, the original balance has been restored; (3) deleterious reorganization, although the balance was restored, the original protective factors were damaged and a lower level of balance was formed; (4) malfunctioning reorganization, risk factors lead individuals to adopt negative coping styles, such as substance abuse and other dangerous behaviors. Therefore, the relationship between psychological resilience and negative coping style may exist, and the interaction between psychological resilience and negative coping style is also related to positive coping style.

## Present Study

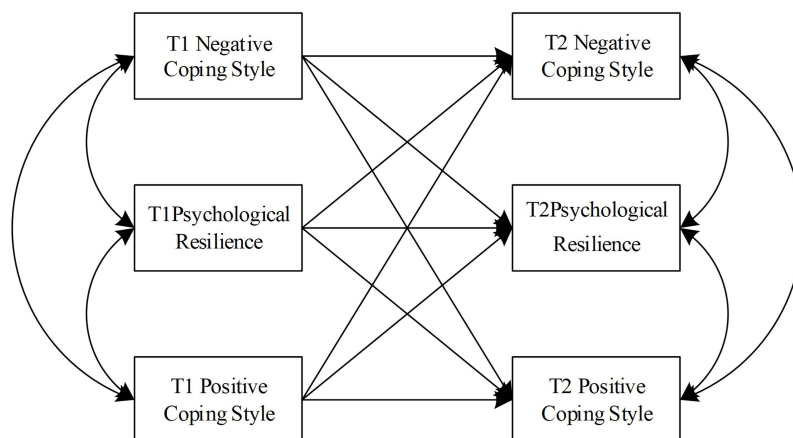
Previous studies have shown that psychological resilience can promote the formation of positive coping styles, and may be an important antecedent variable of positive coping styles.<sup>25–27</sup> For example, some researchers have found that psychological resilience can help infertility patients reduce negative coping styles, such as stigma and social avoidance, and help them effectively cope with stress and form positive coping styles.<sup>28</sup> Therefore, based on the interaction between positive and negative coping styles in behavior change theory and the interaction between psychological resilience and coping styles in Richardson's model of psychological resilience, the study preliminarily hypothesizes that there is an interactive relationship between psychological resilience and negative and positive coping styles.

Some scholars posit that psychological resilience is not a fixed personality characteristic, but instead a flexible process that involves positive adjustment.<sup>29</sup> This protective impact of psychological resilience varies over time and by environment. As a result, this research explores the dynamic interplay between negative coping styles, psychological resilience and positive coping styles in military personnel using the health behavior change theory and the resiliency model. Figure 1 displays the research hypothesis model.

## Research Methods

### Subjects

The research employed the cluster convenient sampling method. Two companies from a military unit in Xi'an, China were selected as the subjects, excluding those with special conditions of illness. A total of 233 military personnel were surveyed by questionnaires at two different time points. The first survey was carried out in April 2023 (T1), with the second one following in July 2023 (T2). In addition, participants did not receive any training on psychological resilience and coping style skills between the two measurement time points. All screening questionnaires yielded valid data, leading to a total of 233 male participants (age:  $M = 22.90 \pm 2.94$ ) being enrolled in the study. The surveys were centrally organized by experts and completed and submitted following standardized instructions. Besides, written consent was obtained from all participants.



**Figure 1** Research hypothesis model.

## Research Tools

### Simplified Coping Style Questionnaire (SCSQ)

Simplified coping style questionnaire compiled by Xie Yaning was adopted,<sup>2</sup> which included positive coping style and negative coping style. The positive coping style consisted of items 1–12, and the higher the score, the more likely the individual was to adopt a positive coping style when faced with stress. And the negative coping style consisted of items 13–20, higher scores indicated that individuals were more likely to adopt a negative coping style when faced with stress. The questionnaire uses a 4-point scale, with “never” to “often” representing a score of 0–3. The Cronbach’s alpha coefficient of the positive coping style subscale was 0.914 at T1, 0.942 at T2, and the Cronbach’s alpha coefficient of the negative coping style subscale was 0.836 at T1, 0.874 at T2.

### Connor-Davidson Resilience Scale (CD-RISC)

The revised version of the Connor-Davidson Resilience scale (CD-RISC) by Yu Xiaonan and Zhang Jianxin comprises of three dimensions: tenacity, strength, and optimism.<sup>30</sup> The questionnaire is composed of a total of 25 items and is scored using a Likert 5-point scale. The scale ranges from 0 to 4, representing “never” to “almost always”. The total score of the questionnaire demonstrates the level of psychological resilience, with a higher score indicating a higher level of psychological resilience. The scale showed a consistency coefficient of 0.948 at T1 and 0.963 at T2.

## Data Collection and Statistical Analysis

Prior consent was obtained from all participants involved. The conduction and collation of the questionnaire were conducted by mental health professionals who underwent prior training, ensuring consistency in instructions, questionnaire content, and test precautions. During the testing process, the personnel who distributed the questionnaire presented the instruction language and provided guidance for completing the questionnaire. Subsequently, the participants completed the questionnaire on-site as a class unit, and then returned it. The testing procedures were identical at both time points. SPSS 22.0 was utilized for data entry and analysis, while M-plus 8.0 was employed for constructing cross-lagged models. For model estimation, robust maximum likelihood estimation (MLR) was used, and missing data estimation was done using full information maximum likelihood estimation (FIML).<sup>31</sup>

## Results

### Common Method Bias Test

The common method bias test of all variables was performed by Harman single factor method.<sup>32</sup> The results showed that there were 15 factors with eigenvalues greater than 1, and the variance explanation rate of the first factor was 34.74%, meeting the critical standard of less than 40%.<sup>32</sup> Therefore, no common method bias was considered in this study.

### Descriptive Statistics and Correlation Analysis

The descriptive statistics of each variable and the correlation between variables are shown in Table 1. The temporal correlation of negative coping style, psychological resilience and positive coping style at the two time points was significant (negative coping

**Table 1** Descriptive Statistics and Correlation Analysis of All Variables

	1	2	3	4	5	6
1. T1 Negative coping	–					
2. T1 Psychological resilience	0.17*	–				
3. T1 Positive coping	0.28**	0.71**	–			
4. T2 Negative coping	0.39**	0.05	0.09	–		
5. T2 Psychological resilience	–0.10	0.61**	0.49**	0.12	–	
6. T2 Positive coping	–0.02	0.53**	0.57**	0.18**	0.74**	–
M	1.08	2.88	2.26	1.19	3.97	2.36
(SD)	0.63	0.59	0.54	0.72	0.67	0.55

Notes: \*\*p < 0.01, \*p < 0.05. The mean value of each scale was used as the index for calculation.

style:  $r = 0.39$ , psychological resilience:  $r = 0.61$ , positive coping style:  $r = 0.57$ ,  $p < 0.01$ ). The negative coping style at T1 was positively correlated with psychological resilience ( $r = 0.17$ ,  $p < 0.05$ ) and positive coping style ( $r = 0.28$ ,  $p < 0.01$ ) at T1, and psychological resilience was also positively correlated with positive coping style at T1,  $r = 0.71$ ,  $p < 0.01$ . There was no correlation between negative coping style and psychological resilience at T2 ( $r = 0.12$ ,  $p > 0.05$ ), but there was a positive correlation between negative coping style and positive coping style at T2 ( $r = 0.18$ ,  $p < 0.01$ ). Psychological resilience at T2 was positively correlated with positive coping style at T2,  $r = 0.74$ ,  $p < 0.01$ .

## Characteristics of Coping Style and Psychological Resilience of Military Personnel

At the initial time of T1, the level of negative coping style was  $1.08 \pm 0.63$ , the level of positive coping style was  $2.26 \pm 0.54$ , and the level of psychological resilience was  $2.88 \pm 0.59$ . The paired sample  $t$ -test was conducted with negative coping style, positive coping style and psychological resilience as dependent variables and time point as independent variable. The results showed that the coping style and resilience of all military personnel were improved at T2, negative coping style:  $t = -2.26$ ,  $p = 0.025$ ; Positive coping style:  $t = -3.06$ ,  $p = 0.002$ ; Psychological resilience:  $t = -29.49$ ,  $p < 0.001$ .

## Cross-Lagged Analysis

Before conducting the cross-lagged analysis, the measurement invariance of negative coping style, psychological resilience and positive coping style in the two time point measurements was first tested. The fitting of each model is shown in Table 2. According to the model comparison criteria of Cheung and Rensvold,<sup>33</sup> the assumption of measurement invariance could be accepted when  $\Delta CFI \leq 0.01$ . The configural invariance, metric invariance and scalar invariance of negative coping style all met the criteria ( $\Delta CFI \leq 0.01$ ). The configural invariance, metric invariance and scalar invariance of positive coping style all met the criteria ( $\Delta CFI \leq 0.01$ ). The configural invariance and metric invariance of psychological resilience were  $\Delta CFI \leq 0.01$ , but scalar invariance of psychological resilience was  $\Delta CFI > 0.01$ . According to the existing research standards, the condition of cross-lagged analysis is satisfied if the configural invariance value and the metric invariance value are met.<sup>34</sup> Therefore, the cross-lagged analysis can be carried out in this study.

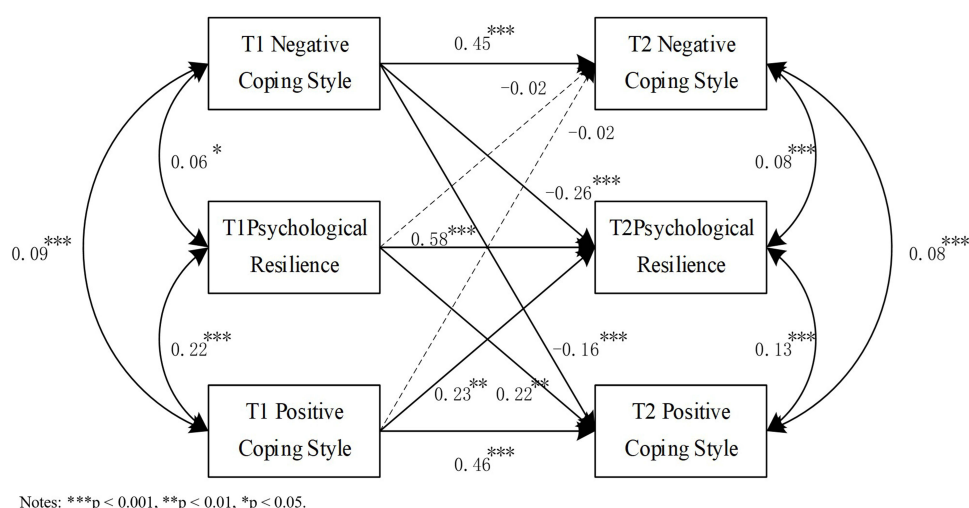
According to the hypothesized model in Figure 1, the cross-lagged relationship between negative coping style, psychological resilience and positive coping style was examined by structural equation modeling. In the model, an autoregressive path is set between the same variable at two time points to control the development stability of the same variable, a cross-lagged path is set between different variables at two time points, and error correlation is set between observed variables at the same time point.<sup>35</sup> The results of the model were shown in Figure 2. Since the degree of freedom of the model is equal to 0, that is, all the parameters to be estimated are equal to the elements of the covariance matrix, the model belongs to the saturated model, so its fitting index is no longer estimated, and only the path coefficient is concerned.<sup>36</sup>

Figure 2 shows that negative coping style at T1 significantly negatively predicted psychological resilience ( $\gamma = -0.26$ ,  $SE = 0.06$ ,  $p < 0.001$ ) and positive coping style ( $\gamma = -0.16$ ,  $SE = 0.05$ ,  $p < 0.001$ ) at T2, and psychological resilience at T1 significantly positively predicted positive coping style at T2.  $\gamma = 0.22$ ,  $SE = 0.08$ ,  $p < 0.01$ , but could not significantly predict the negative coping style at T2,  $\gamma = -0.02$ ,  $SE = 0.10$ ,  $p = 0.881$ . In addition, the positive coping style at T1 could

**Table 2** Measurement Invariance Test of Research Tools

		$\chi^2$	df	CFI	TLI	RMSEA (90% CI)	SRMR	$\Delta CFI$
Negative coping style	Configural invariance	66.23**	40	0.98	0.97	0.053[0.029, 0.075]	0.03	
	Metric invariance	71.66*	47	0.98	0.98	0.047[0.023, 0.069]	0.04	0.00
	Scalar invariance	82.38**	54	0.98	0.98	0.047[0.025, 0.067]	0.04	0.00
Psychological resilience	Configural invariance	1625.91***	550	0.89	0.88	0.092[0.086, 0.097]	0.05	
	Metric invariance	1653.71***	574	0.89	0.88	0.090[0.085, 0.095]	0.06	0.00
	Scalar invariance	1830.57***	598	0.87	0.87	0.094[0.089, 0.099]	0.09	0.02
Positive coping style	Configural invariance	393.26***	108	0.92	0.90	0.106[0.095, 0.118]	0.04	
	Metric invariance	402.80***	119	0.92	0.91	0.101[0.090, 0.112]	0.05	0.00
	Scalar invariance	415.53***	130	0.92	0.92	0.097[0.087, 0.108]	0.05	0.00

Notes: \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$ .



**Figure 2** Cross-lagged analysis of coping style and psychological resilience.

significantly positively predict the psychological resilience at T2,  $\gamma = 0.23$ ,  $SE = 0.06$ ,  $P < 0.001$ . Positive coping style at T1 significantly positively predicted psychological resilience at T2,  $\gamma = 0.09$ ,  $p < 0.01$ , but had no significant effect on negative coping style at T2,  $\gamma = -0.02$ ,  $SE = 0.10$ ,  $p = 0.881$ . Therefore, psychological resilience may play a mediating role in the relationship between negative coping style and positive coping style.

## Discussion

### The Longitudinal Influence Relationship Between Negative Coping Style, Positive Coping Style, and Psychological Resilience in Military Personnel

The findings indicate that negative coping style at T1 of military personnel can have adverse effects on their positive coping style at T2 through their level of psychological resilience. This means that the existing tendency for negative coping of military personnel can decrease their positive coping tendencies by lowering their level of psychological resilience. The result is in line with previous research which demonstrates that individuals with high levels of psychological resilience are more likely to adopt positive coping strategies.<sup>3,37</sup> Conversely, individuals who are prone to utilizing negative coping strategies tend to have lower levels of psychological resilience, as negative coping styles negatively predict psychological resilience.<sup>37,38</sup> However, there has been no exploration of the relationship between negative coping styles and positive coping styles in terms of psychological resilience in earlier studies. Moreover, there is a lack of follow-up studies conducted over a longer period of time. From the results of previous studies, the relationship between coping styles and resilience has been debated. Some studies indicate that coping style acts as a mediator in the association between psychological resilience and negative emotions among military personnel.<sup>17</sup> Additionally, psychological resilience may also act as a mediator between coping style and depression. But it is noteworthy that the research sample did not include military personnel.<sup>39</sup> Considering controversy, this study concentrated on the health behavior of the military personnel, specifically their positive coping style, and regarded solely the correlation between psychological resilience and coping style. The discoveries indicate that the controversy may stem from the directional influence between positive coping style and negative coping style. Namely, the current negative coping style within the military personnel reduces their positive psychological resources (psychological resilience) and consequently decreases their positive coping style.

Coping style is one of the important factors leading to mental illness.<sup>40</sup> According to the theory of health behavior change, negative coping with unhealthy behaviors such as avoidance and substance abuse will destroy an individual's existing positive psychological resources. This has attracted the attention of many researchers.<sup>41–43</sup> Psychological resilience has the effect of reversing an individual's negative psychological resources. The results of this study prove the resilience theory,<sup>33</sup> and the positive resources of psychological resilience play a reorganization role, which can not



only restore the original state, but also promote the individual to develop a better adaptive advantage state. As the results of this study found, psychological resilience can promote the existing negative coping styles of military individuals to change into positive coping styles, which provides a new entry point for the intervention practice of health behavior.

## The Two-Way Relationship Between Positive Coping Style and Psychological Resilience of Military Personnel

Longitudinal research has demonstrated that positive coping style during T1 of military personnel can influence their psychological resilience levels during T2, while the existing psychological resilience levels during T1 can similarly affect their positive coping style during T2. This suggests that there is a reciprocal relationship between positive coping styles and psychological resilience, which may partly explain the controversy about the direction of the role of coping styles and psychological resilience in previous research findings,<sup>17,39</sup> that is, the direction of effect of two variables is affected by different types of coping styles. It is worth noting that these types of coping styles are not necessarily distinct and may convert to each other.<sup>43</sup> If psychological resilience is considered an ability, then the shift from negative to positive coping styles is a consequence of this psychological resilience. The most recent review of research has demonstrated that emotional regulation plays a significant role in the theoretical construct of psychological resilience. Additionally, emotional regulation is critical in elucidating the remarkable adaptability of psychological resilience, as it empowers individuals to successfully modify their unhealthy thoughts and behaviors to cultivate adaptive, positive psychological traits.<sup>43</sup> According to the transtheoretical model of health behavior change, an individual's positive psychological resources, such as self-efficacy, are important for promoting and maintaining healthy behaviors. An individual possesses various coping styles, some of which can be considered positive psychological resources. These resources both help in jointly resisting the depletion of risk factors.<sup>44</sup>

Psychological resilience and positive coping style can effectively alleviate the adverse psychological symptoms caused by stressors. The military personnel are under high stress environment for a long time. Improving their psychological resilience and promoting them to adopt positive coping style is very important for restoring the morale of the army and improving the combat effectiveness of the army. This study provides empirical research support for changing the negative coping style of military personnel. The role of psychological resilience in the process of changing the negative coping style of military personnel is put forward. Future research can also focus on the relationship between other types of coping styles and psychological resilience, and explore the transition between other types of coping styles, such as problem-centered and emotion-centered coping styles.<sup>45</sup> Furthermore, it is crucial to examine how other individual differences, like executive function level, cognitive flexibility, metacognitive level, and emotional regulation ability, affect the transition of coping styles.

## Conclusion

This research highlights two significant findings: (1) Military personnel's psychological resilience is impacted by their negative coping styles, which in turn reduces their positive coping style in the future, thus establishing a longitudinal causal relationship; (2) A robust positive relationship between military personnel's psychological resilience and their positive coping style has been identified. The study indicated that the military personnel's psychological resilience level played a crucial role in enabling them to adopt positive coping styles and reverse negative coping styles.

## Data Sharing Statement

The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

## Ethical Statement

This study complied with the Declaration of Helsinki, and was approved by Air Force Medical University Research Ethics Committee. Informed consent was obtained from all the participants for being included in the study.

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## Disclosure

The authors declare that they have no conflict of interest.

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