



Original Article

# The mediating role of coping strategies in the relationship between personality traits and perceived stress with health anxiety during the COVID-19 pandemic

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## Abstract

**Introduction:** This study investigated the mediating role of coping strategies in the relationship between personality traits and perceived stress with health anxiety during the COVID-19 pandemic.

**Materials and Methods:** The statistical population of this descriptive and cross-sectional study included the citizens of Shirvan city-Iran. A number of 386 people were selected by the convenient sampling method. Research instruments included Iowa Personality Questionnaire, The Health Anxiety Inventory, Perceived Stress Scale, and Multidimensional Coping Inventory. The data were analyzed using correlation, path analysis, SPSS and AMOS software.

**Results:** The findings showed a significant relationship among traits of emotionality, perceived stress, problem-oriented coping, emotion-oriented coping, and health anxiety ( $P < 0.001$ ). The results of path analysis showed that perceived stress and positive and negative emotionality affects health anxiety through emotion-oriented coping strategy.

**Conclusion:** During the COVID-19 pandemic, the general population with high stress and negative emotionality could control their health anxiety using emotion-oriented strategies.

**Keywords:** Adaptation, Health anxiety, Personality, Stress

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## Introduction

Severe and prolonged anxiety may threaten mental health and impair daily life (1). The COVID-19 pandemic with high complications and mortality has currently affected humans' mental and physical health (2,3). Previous studies indicated that individuals suffering from COVID-19 pandemic-related psychological distress tend to exhibit elevated high levels of health anxiety (4,5).

Health anxiety occurs when feelings or perceived physical changes are interpreted as symptoms of a serious illness. Contemporary cognitive-behavioral models consider health anxiety a sequence, from mild to severe, and a central aspect of several psychiatric diagnoses. Severe symptoms of health anxiety are associated with different dysfunctional beliefs and different types of checking health behaviors. These severe symptoms are often

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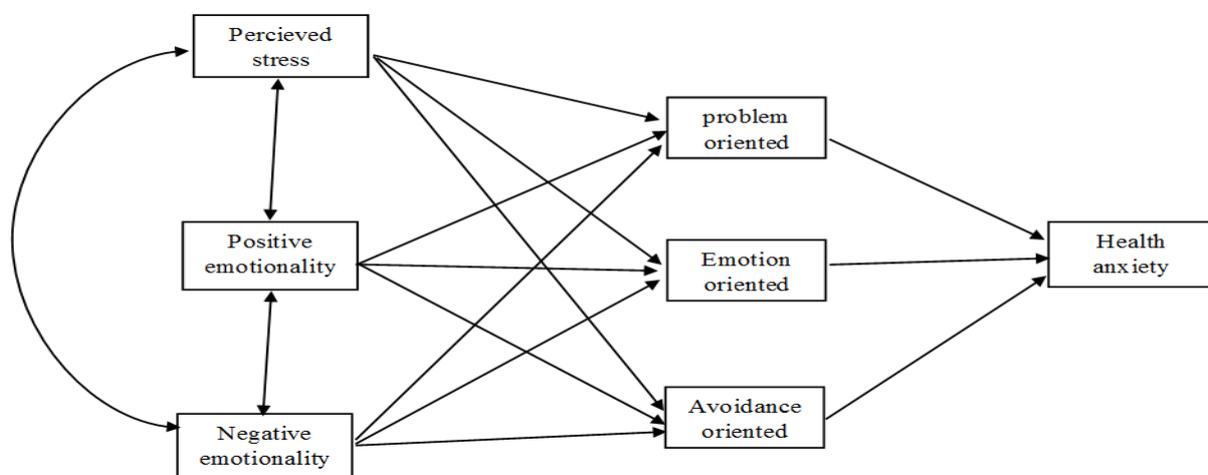
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personally debilitating and have significant social outcomes (6). Individuals with higher levels of anxiety and checking behaviors may impose a heavy burden on health care units, others may not seek medical help in health care units to avoid infection, and even lower levels of health anxiety can lead to disobedience of health guidelines for controlling an epidemic (1). Stress is one of the most important factors affecting health, and people use cognitive, emotional, and behavioral efforts to deal with stress by changing, interpreting, and correcting stressful situations to reduce its suffering (7). If a situation is perceived as stressful, it is more likely that stress-coping strategies will be used, and studies show that the level of perceived stress is related to emotion-oriented and problem-oriented strategies (8). Recently, a study showed that perceived stress was associated with health anxiety, problem-oriented strategy, and cognitive reconstruction were significantly correlated with lower stress and anxiety levels (9). Regarding the relationship between stress-coping strategies during COVID-19 in the general population, a study found that most individuals used problem-oriented coping strategies, and many participants reported that they listened to expert advice and tried to stay calm (10). In another study, it was reported that health anxiety affected COVID anxiety by increasing perceived risk; also, perceived control affected maladaptive preventive behaviors by reducing health anxiety (11). Personality traits can be protective in coping with stress caused by health anxiety (12). It was reported in a study that after controlling for the effects of gender,

age, and sensitivity to anxiety, emotional responsiveness was significantly more predictive of health anxiety; also, the findings predicted that experiencing emotions intermittently, intensely, and a long time before returning to baseline was more associated with health concerns (13). Recently, another study examined the relationship between five major personality traits, health anxiety, anxiety, and depression symptoms during the epidemic, which showed that extraversion, agreeableness, conscientiousness, and openness negatively related to anxiety and depression symptoms; while neuroticism, health anxiety, and COVID-anxiety were positively associated with depressive and anxiety symptoms (14).

Despite the growing evidence of health anxiety, little information is available on the factors contributing to health anxiety in the general population. During the COVID-19 pandemic, most studies about the factors affecting health anxiety have been conducted among nurses, healthcare workers, medical students (15), and patients (16). Mainly it has not been investigated simultaneously the role of perceived stress, coping strategies, and personality traits in health anxiety in the general population. Given the theoretical foundations and mentioned studies, this study assumes that personality traits and perceived stress can, through stress-coping strategies, affect health anxiety (Figure 1). Therefore, this study seeks to investigate the role of stress perceived and personality traits in predicting health anxiety by mediating coping strategies in a conceptual model in the general population during the corona epidemic.



**Figure1.** Conceptual suggested model

## Materials and Methods

Considering that the present study seeks to investigate the relationship between personality traits and perceived stress with health anxiety through the mediation of coping with stress, the method is descriptive and correlated. The statistical population of the study includes the citizens of Shirvan city-Iran.

According to Cochran's formula for a community with unlimited volume, 386 people were considered for the sample size. Due to the prevalence of COVID-19, the samples were selected through the convenient sampling method.

This study has been approved by the research committee of the Bojnord branch of Islamic Azad University regarding ethical considerations. The inclusion criteria in the research included: aged over 18 years, living in Shirvan city, willingness to participate, the ability to use virtual space, and the ability to answer questions in virtual space. The research exclusion criteria included unwillingness to continue, and incomplete questionnaires. Anonymous and electronic questionnaires with a specific pattern were completed in cyberspace.

### Research instruments

*A) Iowa Personality Questionnaire:* This questionnaire is a 42-item personality assessment. This questionnaire includes three factors constraint, negative emotionality, and positive emotionality. The constraint factor measure control, harm avoidance, and traditionalism; the negative emotionality factors measure aggression, alienation, and stress response; the positive emotionality factor measure progress, social strength, well-being, and social closeness.

Cronbach's alpha coefficient of this questionnaire for the factors of constraint, positive emotionality, and negative excitability was reported as 0.67, 0.80, and 0.74, respectively (17). In Iran, the reliability of the retest was reported for the questionnaire at 0.85 and the factors in the range of 0.72 to 0.87 (18). This study used only negative emotionality and positive emotionality. Cronbach's alpha coefficient for this questionnaire in this study was 0.88.

*B) Health Anxiety Inventory:* This inventory was designed to measure health anxiety and components of general health concerns, getting a disease, and the consequences of the disease. It has 18 items with a four-point Likert scale.

It was reported that the health anxiety inventory has high internal consistency and can discriminate hypochondriacal patients more than other anxiety disorder patients (19).

In Iran, it was confirmed its validity, and Cronbach's alpha coefficient was estimated above 0.70 (20). In the present study, Cronbach's alpha coefficient was 0.78.

*C) Perceived Stress Scale:* This scale was designed to measure the degree to which situations in life are evaluated as stressful. It has 14 items with a four-point Likert scale (never=0 to too much= 3). Designers in three studies reported Cronbach's alpha on this scale of 0.84, 0.85, and 0.86 (21).

In Iran, based on the results of fit indices in confirmatory and exploratory factor analysis, this scale had satisfactory and internal consistency (0.76) (22). In the present study, the Cronbach's alpha coefficient was 0.84.

*D) Multidimensional Coping Inventory (MCI):* This 48-item inventory was developed to measure problem-oriented, emotion-oriented, and avoidance-oriented coping strategies. The items are answered on a five-point Likert scale. The designers assessed the construct and criterion validity, along with the MCI coping scales, in which the results suggested that the MCI is a valid and highly reliable multidimensional measure of coping styles (23). In Iran, the psychometric properties of this questionnaire were studied, and the results showed that Cronbach's alpha coefficients ranged from 0.70 to 0.86 and the retest reliability coefficient ranged from 0.55 to 0.64.

The results of confirmatory factor analysis show that the three-factor model of this questionnaire has an acceptable fit with the data. The correlation coefficients between subscales of the coping questionnaire with stressful situations and personality traits showed that this questionnaire has convergent validity (24). The data were analyzed using correlation, path analysis, and SPSS and AMOS software.

## Results

Regarding gender, 285 (73.83%) and 101 (26.16%) participants were female and male, respectively. The number 129 (33.41%) of participants were single respondents, and 257 (66.58%) were married. The participants' educational level was 9.84 percent under diploma, 22.27 percent diploma, 37.04 percent bachelor, 28.49 percent master, and 2.33 percent doctorates. Also, in terms of

employment status, participants were 53.62 percent employees of the government, 15.54%

self-employed, 11.13% students, 17.35% housewives, and 2.02% unemployed.

**Table 1.** Descriptive statistics and correlation of variables

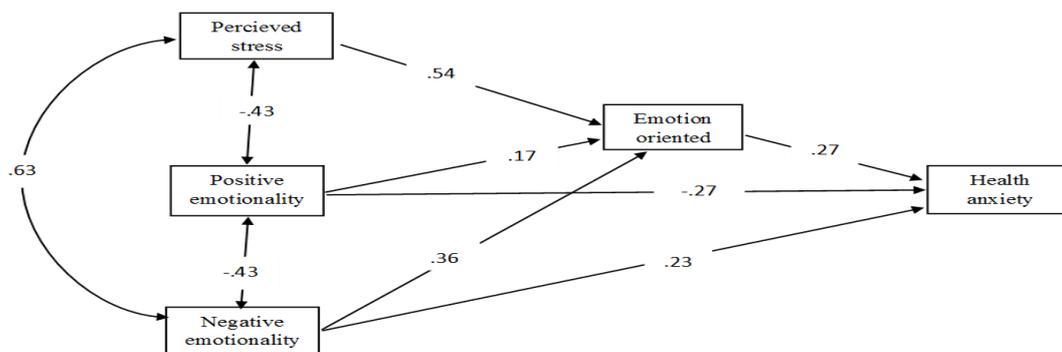
| Variables                | M     | SD    | 1       | 2       | 3       | 4      | 5      | 6    | 7 |
|--------------------------|-------|-------|---------|---------|---------|--------|--------|------|---|
| 1- Positive emotionality | 43.48 | 7.66  | 1       |         |         |        |        |      |   |
| 2- Negative emotionality | 39.46 | 8.27  | -0.43** | 1       |         |        |        |      |   |
| 3- Perceived stress      | 38.50 | 8.26  | -0.43** | 0.62**  | 1       |        |        |      |   |
| 4- Problem-oriented      | 55.94 | 10.85 | 0.51**  | -0.42** | -0.49** | 1      |        |      |   |
| 5- Emotion-oriented      | 43.30 | 11.93 | -0.22** | 0.63**  | 0.70**  | 0.20** | 1      |      |   |
| 6- Avoidance-oriented    | 44.53 | 9.12  | 0.28**  | -0.07   | 0.08    | 0.42** | 0.14*  | 1    |   |
| 7- Health anxiety        | 16.36 | 10.77 | -0.43** | 0.51**  | 0.43**  | 0.27** | 0.47** | 0.06 | 1 |

Table 1 shows that a trait of positive emotionality has a significant correlation with problem-oriented and avoidance-oriented strategies. However, it negatively correlates with health anxiety, perceived stress, and emotion-oriented strategy. While the trait of negative emotionality has a significant positive correlation with perceived stress, health anxiety, and emotion-oriented strategy, and it has a significant negative correlation with problem-oriented strategy. Also, the results showed that perceived stress relates to negatively problem-oriented strategy and positive health anxiety and emotion-oriented strategy. Finally, the results showed that both problem-oriented and emotion-oriented strategies have a significant positive correlation with health anxiety.

The conceptual model (Figure 1) was evaluated using path analysis, and the proposed model did not fit. To revise the model, the avoidance and problem-oriented strategy variables were removed. As a result, the model has fitted again, and the fitting results of the proposed and revised models are shown in Table 2. The overall validity of the suggested and revised model is tested using multiple goodness-of-fit criteria. In the revised model, since the value of Root Mean Square Error of Approximation (RMSEA= 0.01), Goodness-of-fit index (GFI= 0.99), and Adjusted Goodness-of-fit Index (AGFI= 0.98) have an acceptable level. Therefore, the revised model is credible. Figure 2 shows the path coefficients in fitted model. Table 3 presents direct and total effects of paths.

**Table 2.** Goodness-of-fit criteria for suggested and revised models

| Model     | X2/DF | P     | Root Mean Square Error of Approximation (RMSEA) | Normed Fit Index (NFI) | Comparative Fit Index (CFI) | Goodness of Fit Index (GFI) | Adjusted Goodness of Fit Index AGFI |
|-----------|-------|-------|---|------------------------|-----------------------------|-----------------------------|-------------------------------------|
| Suggested | 6.23  | 0.000 | 0.09  | 0.90                   | 0.90                        | 0.90                        | 0.89                                |
| Revised   | 0.15  | 0.69  | 0.01  | 0.99                   | 0.99                        | 0.99                        | 0.98                                |



**Figure 2.** Paths coefficients in fitted model

**Table 3.** Direct and total effects of paths

| Paths                                     | Direct effect | Critical Ratio (CR) | P     | Total effect |
|---|---------------|---------------------|-------|--------------|
| Positive emotionality to emotion-oriented | 0.17          | 4.43                | 0.001 | 0.17         |
| Negative emotionality to emotion-oriented | 0.36          | 8.26                | 0.001 | 0.36         |
| Perceived stress to emotion-oriented      | 0.54          | 12.37               | 0.001 | 0.54         |
| Emotion-oriented to health anxiety        | 0.27          | 5.06                | 0.001 | 0.27         |
| Negative emotionality to health anxiety   | 0.23          | 3.97                | 0.001 | 0.32         |
| Positive emotionality to health anxiety   | -0.27         | -6.04               | 0.001 | -0.27        |
| Perceived stress to health anxiety        | -             | -                   | -     | 0.14         |

Table 3 shows that all paths between variables are significant ( $P < 0.01$ ). The stronger total effect is related to perceived stress to emotion-oriented, negative emotionality to emotional-oriented, and negative emotionality to health anxiety, respectively. The Sobel test is a method to measure the significance of the effect of the mediator variable in statistics. This test is performed using the standard beta of the independent and mediating variable (b) and the standard error of the mediating and dependent

variables (Sb), and normal estimation can be used to check the significance of the relationship. If the value of the Sobel test statistic is greater than the critical value of 1.96, the mediation effect is significant.

According to the results of Table 4, the emotion-oriented strategy variable mediates significantly the relationship between negative emotionality, positive emotionality, and perceived stress with health anxiety ( $P < 0.01$ ).

**Table 4.** Significance mediator paths with Sobel test

| Paths   | Statistic | P     |
|---|-----------|-------|
| Negative emotionality → Emotion oriented → Health anxiety | 4.31      | 0.001 |
| Positive emotionality → Emotion oriented → Health anxiety | 3.33      | 0.001 |
| Perceived stress → Emotion oriented → Health anxiety      | 4.68      | 0.001 |

## Discussion

This study investigated the mediating role of coping styles in the relationship between perceived stress and personality traits with health anxiety during the COVID-19 pandemic. However, previous studies have not simultaneously examined the role of personality traits and perceived stress with the mediating role of coping strategies with health anxiety. Those studies were done with only two of the studied variables and mostly among healthcare workers, medical and non-medical students (14,15). The present study showed a significant correlation between perceived stress, emotion-oriented, problem-oriented strategies, and health anxiety. Consistent with this study, previous studies have shown that during the COVID-19 pandemic, increased perceived stress has been associated with higher levels of health anxiety (25). Also, in line with the present results, studies showed that people who suffer from high stress do not use effective coping styles and report more psychological problems (26). It seems that

individuals with higher perceived stress try to manage their stress using emotion-oriented and problem-oriented strategies. Consistent with the results of this study, previous studies found that people who have higher perceived control over the disease tend to adopt more adaptive prevention behaviors and experience less health anxiety, while people who feel more at risk experience more health anxiety in COVID-19 pandemic (13).

The present study also showed that health anxiety was positively correlated with perceived stress and emotion-oriented coping and negatively correlated with a problem-oriented coping strategy. Consistent with these findings, the previous studies indicated that people who use problem-oriented strategies pay more attention to the advice of experts and follow them (9). Similar to the present study, other studies have shown that health anxiety was positively correlated with maladaptive emotion regulation and negatively correlated with adaptive emotion regulation (27). According to the cognitive-behavioral model of

health anxiety, emotion-oriented strategies can partially regulate the physiological, cognitive, and behavioral consequences of the fear response, even when the individual has confronted with a conditioned stimulus again (28). In the long term, regular use of these dysfunctional emotion control strategies may appear as a functional disorder, which may be associated with anxiety disorders. This study also showed that traits of positive and negative emotionality were significantly correlated with perceived stress, problem-oriented and emotion-oriented strategies, and health anxiety. Consistent with the present study, it has been shown that neuroticism, a vulnerability to stress and a tendency to experience negative emotions, was positively correlated with health anxiety. In contrast, extraversion, openness to experience, agreeableness, and conscientiousness were inversely correlated with health anxiety (14). Personality traits may have a significant impact on the coping strategy used (26). Finally, path analysis in this study showed that the emotionality trait affects health anxiety through emotion-oriented coping strategies. In line with this finding, previous studies show that people who experience health concerns for extended periods have a higher risk of developing anxiety disorders. In general, these findings are consistent with the cognitive-behavioral theory of health anxiety. In particular, high reactivity may increase health concerns or anxieties that lead to a tendency to engage in behavioral coping strategies aimed at reducing anxiety in the short-term (for example,

Internet search obsession or avoidance of behaviors that lead to scary bodily emotions).

In addition, emotionality as a personality variable can, through increasing high arousal and physical feelings related to emotional arousal, play a role in aggravating health anxiety. In this way, physical feelings are misinterpreted as symptoms of a disease. As well as emotional reactivity can play a role in the tendency to reduce anxiety through reassuring seeking or avoidance (29).

The present study has several limitations such as self-report questionnaires, and lack of control of physical problems. Also, the citizens who did not have access to a smartphone, did not participated in this study.

### Conclusion

The results indicated that perceived stress and positive and negative emotionality affect health anxiety through an emotion-oriented coping strategy. Individuals who perceive high levels of stress and negative emotionality trait try using emotion-oriented strategies to control levels of health anxiety during the COVID-19 pandemic. It is recommended to teach adaptive coping strategies to reduce anxiety problems, especially health anxiety.

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