ORIGINAL ARTICLE

The association of personality traits and coping styles according to stress level

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Background: Some personality traits and coping styles could be as risk factors in stressful situations. This study aimed to investigate the association of personality traits and coping styles according to the stress level. **Meterials and Methods:** This cross-sectional study was performed in 2011. A total of 4628 individuals over 20 years were selected by random sampling from nonacademic employees that working in 50 different centers across Isfahan province. Data were collected using 12-item General Health Questionnaire (GHQ-12), Big Five Personality Inventory Short Form and coping strategies scale, and individuals were divided into high and low-stress groups in term of GHQ-12. To analyze the data, a binary logistic regression analysis was conducted. **Results:** Mean age of participants was 36.3 ± 7.91 years and 56.26% (2604) of them were female. Neuroticism with adjusting covariates of demographic characteristics and the rest of personality traits was a risk factor for stress level with odds ratios (OR) OR:1.24; but other personality traits were protective. Also, active coping styles were protective factors for OR of stress level with adjusting covariates of demographic characteristics and the rest of coping styles, and positive reinterpretation and growth was the most effective of coping style with OR:0.84. **Conclusion:** Some personality traits are associated with passive copings and cause high-stress level. So, it could be concluded that improve and strengthen effective coping strategies in individual with maladaptive traits should be considered as a crucial component of prevention and control programs of stress.

Key words: Coping styles, personality traits, stress level

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INTRODUCTION

Nowadays, everyone in their daily lives will experience some form of stress and inevitably tries to utilize a unique way to response.[1] Stress represents a normal, necessary and unavoidable life phenomenon that can generate temporary discomfort, as well as long-term consequences. Scientific information confirms the idea that personality traits are an important factor in identifying, responding and approaching stress events.[2] Personality traits are as prepreparation for thinking or acting in a similar style in response to a variety of different stimuli or situations.[3] Studies have shown that some personality traits can predict stress level.[4-6] Maladaptive personality traits (e.g., neuroticism) is related with increased exposure to stressful life events and likely to make individuals susceptible in experiencing negative emotion and frustration,[4] While, adaptive personality traits (e.g., high extraversion and conscientiousness) were less affected by daily stresses.[7]

Also, personality traits could predict coping styles[8] and influence the coping style we choose.[9] Coping is a regulatory process that can reduce the negative feelings resulting from stressful events.[10] Coping is like the changing of thoughts and actions to manage the external and/or internal demands for a stressful event.[11,12] Indeed, coping is a dynamic process that fluctuates over time in response to changing demands and appraisals of the situation.[13] Three main coping styles are problem-focused coping, emotion-focused coping, and avoidant coping. Problem-focused coping (e.g., problem engagement and positive re-interpretation and growth) involves altering or managing the problem that causes the stress and is highly action-focused.[14] Emotion-focused coping styles are quite varied, but they all diminish the negative emotions associated with stressor, thus those coping are action-orientated.[15,16] Adaptive forms of emotion-focused coping are seeking support and accepting responsibility.[17,18] The third main coping style is avoidant. Avoidant coping can be described as cognitive, and behavioral efforts directed toward minimizing, denying or ignoring dealing with a stressful situation.[19] Although some researchers are placed avoidant coping and emotion-focused coping

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in a group, the styles are conceptually distinct. Avoidant coping is focused on ignoring a stressor and is, therefore, passive.[15,19]

The relationship of personality traits and coping processes has been considered in many studies.[18,20-26] Some studies have shown that adaptive personality traits are significantly positively associated with active coping styles,[20,21,26] While maladaptive personality traits (neuroticism) are positively associated with avoidance coping.[21,18] The association between personality and coping styles suggest that individuals with maladaptive personalities are at a greater risk for experiencing psychological distress as they probably use a maladaptive coping style such as avoidant coping.[9] However, not all the findings regarding the relationship between personality and coping have been consistent. Some researcher have failed to find a significant relationship between some personality traits (agreeableness, conscientiousness, and openness) and coping.[17,27] For example, the significant relationship has not found between extraversion and either problem-focused coping[18,27] or generally adaptive forms of emotion-focused coping such as seeking support and accepting responsibility.[17,18] Accordingly, the main goal of this study is more comprehensive examining the association of personality traits and coping styles according to the stress level in a large sample.

MATERIALS AND METHODS

The current study was conducted within part of the Study on the Epidemiology of Psychological-Alimentary Health and Nutrition (SEPAHAN) project. This project was a community-based program designed to study the epidemiology of functional gastrointestinal disorders (FGIDs) in Iran in 2011. Furthermore, the role of different lifestyle, nutritional, and psychological factors in FGIDs symptoms and their severity was investigated. Details of this project have been published recently.[28]

Study population

The current study is a part of the SEPAHAN (ref). In this cross-sectional study, the studied sample was selected using multistage cluster sampling and convenience sampling in last stage among 4 million people in 20 cities across Isfahan province. In SEPAHAN study, data were collected in two separate phases to increase the accuracy, as well as the response rate. In the first phase, all participants were asked to complete a self-administered questionnaire about demographic and lifestyle factors including nutritional habits and dietary intakes. In the second phase, further information on gastrointestinal functions and different aspects of psychological variables were collected using another bunch of self-administered questionnaires (response rate: 86.16%). In the current analysis, we used data from 4,763 adults who had completed data on demographic data, personality traits, life event, coping with stress, social support, and psychological outcome such as depression and anxiety. The protocol of the study was approved by the ethics committee of IUMS and was clarified for all the participants, and a written informed consent was obtained from all participants.

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Measurements

After assuring to individuals about the confidentiality of the information, data on demographic characteristics, personality traits and coping styles were collected by standardized self-administered questionnaires.

Demographic factors

Demographic factors applied in this study were age, sex as male and female, marital status as unmarried (single, widow and divorce) and married, educational level as 0-12 years (undergraduate), and >12 years (graduate).

12-item general health questionnaire

The stress level was measured by the Iranian validated version of GHQ-12. GHQ-12 is a consistent and reliable instrument for using in general population studies. Each item is rated on a four-point scale (less than usual, no more than usual, fairly more than usual and much more than usual). The system used to score the GHQ-12 questionnaires was the 0-0-1-1 method. Using this method, a participant could have been scored between 0 and 12 points; a score of 4 or more was used to identify a participant with high-stress level. Validity of the GHQ-12 is good and it has the satisfactory internal consistency (a = 0.87).[29]

Big five personality inventory short form

This scale was developed by Costa and McCrae (1992). It consisted of 60 items grouped into five subscales: Extraversion, neuroticism, agreeableness, openness to experience and conscientiousness. Each of the five personality traits is assessed using 12-items. Respondents rate each item on a one (strongly disagree) to five (strongly agree) scale. Certain items are reverse scored. Higher scores indicate higher levels of that particular personality trait.[30] The reliability for the entire scale (a =.70) and subscales (as >68) were adequate.[31] In Iranian sample, the internal consistency of the subscales was 0.83-0.39.[32]

Coping strategies scale

A multicomponent self-administered coping strategies questionnaire was used to assess the cope with stressful life

event. It consisted of the 23 items grouped into five subscales: Positive reinterpretation and growth, Problem engagement, Acceptance, seeking support and Avoidance. The reliability of the questionnaire was determined using Cronbach's alpha coefficient ($a = 0.84$). Each item was scored on a 3-point scale (never = 0, sometimes = 1, and often = 2). For each scales, separate scores were reported.[33] Furthermore, Iranian form of cope scale had a good validity and reliability.[34]

Statistical analysis

Descriptive analysis of the study population was performed (i.e., mean ± standard deviation for continuous variables and percentages for discrete variables), and differences between groups were analyzed with *t*-test and Chi-square test. Pearson correlation coefficient was used to evaluate the correlation of personality traits with coping styles. Moreover, for evaluating of the normality of data, kolmograph-smirnov test was used.

A binary logistic regression analysis was performed to separately find the association between personality traits and coping styles with stress level. The dependent variable was stress level (low/high) and the independent variables were personality traits and coping styles. ORs were reported with the corresponding 95% confidence intervals.

The Statistical Package for the Social Sciences version 15.0 (SPSS Inc., Chicago, IL, USA) was used for statistical analyses. A $P < 0.05$ was considered statistically significant for all analyses.

RESULTS

In this study, 4628 individuals with mean age 36.3 ± 7.91; 2604 (56.26%) female; 2585 (55.8%) graduate; 3658 (79.1%) married were examined. The scores on stress level were recorded into two categories, namely, low stress and high stress. Individuals with high stress (1097, 23.1%) significantly were younger, female, undergraduate and married. The descriptive results are presented in Table 1.

Correlations between personality traits and coping styles were computed. As shown in Table 2, extraversion, openness, agreeableness and conscientiousness were positively correlated with problem engagement, seeking support, positive reinterpretation and growth and acceptance, and negatively with avoidance; while neuroticism was negatively correlated with problem engagement, seeking support, positive reinterpretation and growth and acceptance, and positively with avoidance.

To examine the association of personality traits and coping styles according to stress level, a binary logistic regression was conducted with stress level serving as the dependent variable. The results are shown in Table 3. In crude analysis, neuroticism was a risk factor for stress level with OR, 95% confidence intervals: 1.24 (1.22, 1.26); but other personality traits were protective factors. The most protective factor was extraversion with 0.83 (0.82, 0.85). Also, active coping styles were protective factors for stress level, and positive reinterpretation and growth was the most effective of coping style with 0.64 (0.60,0.69). In model 1, with adjusting covariates of demographics characteristics (age, sex, marital status and educational level) didn't show sensible changing in OR stress. Similarly, in model 2, with adjusting covariates of demographic characteristics, and the rest of personality traits didn't show sensible changing in OR stress. Also, in model 3, with adjusting covariates of demographic characteristics, and the rest of coping styles didn't show sensible changing in OR stress.

DISCUSSION

In this study, the association of five personality traits and coping styles was examined. As excepted, results showed

Table 1: Descriptive statistics, means and SD of demographic characteristics, personality traits and coping style according to stress level ($n = 4628$)

Variable	Stress status		*P*
	Low stress ($n = 3561$)	High stress ($n = 1067$)	
Demographic characteristics			
Age (mean±SD)	36.58±8.06	35.85±7.73	0.014
Sex *n* (%)			
Male	1657 (81.9)	367 (18.1)	<0.0001
Female	1904 (73.1)	700 (26.9)	
Educational level *n* (%)			
Undergraduate	1439 (74.8)	484 (25.2)	0.002
Graduate	2036 (78.8)	549 (21.2)	
Marital status *n* (%)			
Married	2836 (77.5)	822 (22.5)	0.066
Unmarried	643 (74.6)	219 (25.4)	
Personality traits			
Neuroticism (mean±SD)	16.69±6.66	26.03±6.94	<0.0001
Extraversion (mean±SD)	30.71±6.18	24.23±6.28	<0.0001
Openness (mean±SD)	24.41±4.85	23.57±5.30	<0.0001
Agreeableness (mean±SD)	31.96±5.77	28.97±5.96	<0.0001
Conscientiousness (mean±SD)	37.41±6.37	33.41±6.90	<0.0001
Coping styles			
Problem engagement (mean±SD)	9.95±1.93	8.60±2.40	<0.0001
Seeking support (mean±SD)	10.24±2.99	8.82±3.31	<0.0001
Positive reinterpretation and growth (mean±SD)	6.68±1.36	5.63±1.64	<0.0001
Avoidance (mean±SD)	3.39±1.79	3.46±1.67	0.292
Acceptance (mean±SD)	3.10±0.94	2.70±1.08	<0.0001

SD = Standard deviation

Table 2: Pearson correlations between personality traits and coping styles

Coping styles	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness
Problem engagement	−0.297**	0.301**	0.134**	0.135**	0.305**
Support seeking	−0.178**	0.295**	0.042**	0.134**	0.169**
Positive reinterpretation and growth	−0.326**	0.341**	0.077**	0.168**	0.246**
Avoidance	0.122**	−0.009	−0.030*	−0.157**	−0.106**
Acceptance	−0.206**	0.185**	0.013	0.132**	0.145**

*$P \leq 0.05$; **$P \leq 0.001$

Table 3: Binary logistic regression analysis for variables predicting stress

Variable	Crude	Model 1	Model 2
	OR (95% CI)	OR (95% CI)	OR (95% CI)
Personality traits			
Neuroticism	1.24 (1.22, 1.26)	1.24 (1.22, 1.26)	1.22 (1.20, 1.24)
Extraversion	0.83 (0.82, 0.85)	0.83 (0.82, 0.85)	0.86 (0.84, 0.87)
Openness	0.96 (0.94, 0.98)	0.96 (0.94, 0.97)	0.98 (0.96, 0.99)
Agreeableness	0.90 (0.89, 0.92)	0.90 (0.88, 0.91)	0.92 (0.90, 0.93)
Conscientiousness	0.90 (0.89, 0.91)	0.90 (0.89, 0.91)	0.93 (0.91, 0.94)
			Model 3
			OR (95% CI)
Coping styles			
Problem engagement	0.75 (0.73, 0.78)	0.76 (0.73, 0.79)	0.89 (0.85, 0.93)
Support seeking	0.87 (0.84, 0.89)	0.86 (0.84, 0.88)	0.94 (0.91, 0.97)
Positive reinterpretation and growth	0.64 (0.60, 0.69)	0.63 (0.60, 0.67)	0.84 (0.79, 0.90)
Avoidance	1.03 (0.99, 1.09)	1.04 (0.99, 1.09)	0.96 (0.90, 1.01)
Acceptance	0.69 (0.64, 0.74)	0.68 (0.65, 0.74)	0.87 (0.79, 0.95)

Model 1 = Age, sex, marital status and educational level adjusted; Model 2 = Age, sex, marital status, educational level and the rest of personality traits (neuroticism, extraversion, openness, agreeableness, and conscientiousness) adjusted; Model 3 = Age, sex, marital status, educational level and the rest of coping styles (problem engagement, support seeking, positive reinterpretation and growth, avoidance and acceptance) adjusted. OR = Odds ratio; CI = Confidence interval

adaptive personality traits were positively associated with active coping styles, and negatively with avoidance coping; and maladaptive personality trait (neuroticism) was negatively associated with active coping styles, and positively with avoidance coping. Openness and conscientiousness had the most significantly positive correlation with problem engagement, and extraversion and agreeableness had the most significantly positive correlation with positive reinterpretation and growth.

Studies have shown individuals with neuroticism use passive coping strategies but extravert individuals utilize active copings.[7,21-23,35] Costa *et al*., reported that neuroticism is negatively related to the use of some effective coping styles such as problem-focused and active coping,[24] and positively associated with avoidance coping.[18,21] Furthermore, most research shows that extraversion is positively related to active coping styles like problem-focused coping styles and looking for social support,[21,25,36] and it predicts avoidance negatively.[21] Conscientious is significantly positively associated with problem-focused coping and its various components like planning, restraint coping and acceptance of responsibility.[20,26] Agreeableness is positively associated with social support seeking,[20,21,35] active coping, planning and positive reappraisal, and negatively associated with self-blame, avoidance and wishful thinking.[20,21] Also, research findings show positive relationships between openness and active coping and positive reinterpretation, and negative correlations with avoidance coping.[20]

Considering the research, it seems that only individuals with neuroticism have difficulty to cope adaptively. They usually use ineffective coping strategies that have poor results. In explaining this finding, it can be elucidated that neuroticism has been associated with more subjective reports of stress symptoms and the occurrence of stressful life events.[6,37] Individuals with high neuroticism are susceptible to psychological helplessness and irrational thoughts and have less ability to control their impulses.[38] They have a tendency to experiencing negative emotions[39] and, therefore, may be to direct their coping efforts toward managing those painful emotions.[22] So, it is more possible that these individuals get involved in passive and maladaptive coping styles.[7]

Past efforts have indicated that certain heritable personality attributes make individuals naturally more resistant or susceptible to eustress or distress and its benefits or disadvantages. Specifically, elements of neuroticism and more protective traits like conscientiousness have been linked to differential interpretations of stimuli, eustressful or distressful, challenging or threatening. It is believed that conscientiousness results in challenge appraisal or eustressful

condition because of sharing in rational solution formation while neuroticism leads to threat appraisal or distressful experience because it is associated with negative reactions.[40]

Some authors assume that coping styles can directly be derived from personality traits,[40] indeed, coping is personality in action.[41] So, it is supposed that personality traits may influence the effectiveness of coping styles. It means the styles that are useful for some individuals may be less effective or even harmful for individuals that have different personality traits.[42,43] Effectiveness of coping refers to the usefulness degree of coping styles in reducing distress. Thus, there is a possibility that high-neuroticism individuals are emotionally more reactive because they choose maladaptive coping styles, or that they choose similar styles to those chosen by low-neuroticism individuals (problem-focused coping) that they are ineffective at alleviating their distress.[42,44] However, it is believed that deeper understanding of the role of personality in the coping process requires an assessment of personality traits and specific coping strategies, and use of laboratory and daily report studies.[26]

The strengths of this study are the large sample of respondents and the application of validated instruments. Limitations are the cross-sectional design, self-report questionnaires and non-controlling other factors that may affect stress level.

CONCLUSION

The current research provided a more complete picture of the relationship of personality traits with coping ways in stressful situations. It showed that adaptive traits with active copings and maladaptive traits with passive copings were associated, and traits associated with passive copings cause high-stress level. So, it could be concluded that improve and strengthen effective coping strategies in individual with maladaptive traits should be considered as a crucial component of prevention and control programs of stress. Also, the findings could be used for determining specific training programs for managing psychological distresses. But, it seems that the active and effective copings require a systematic work considering the role of personality traits in them, especially in "at risk" traits.

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AUTHOR'S CONTRIBUTION

All authors contributed to the study design. PA was Leader of the research. AF and HRR conducting the statistical analysis and MM prepared the Manuscript. HRR and HA read and editing the manuscript. All authors read and approved the final version of the manuscript.

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