Research Paper: The Role of Personality traits in Prediction of Hope in Men with Cardiovascular Disease

Enayatollah Shahidi[1*], Mahnaz Aliakbari[1], Maryam Yavari[1]

1. Department of Psychology, Payame Noor University, Tehran, Iran.

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ABSTRACT

Background: The present study has been done with the primary goal of investigating the role of personality traits in predicting hope in men with cardiovascular disease.

Methods: The type of current research was correlation a land the study population consisted of 200 men with cardiovascular disease chosen by convenience sampling method from people referring to the medical centers in Tehran. For data collection, the short-form NEO five-factor personality questionnaire and the Snyder hope scale (SHS) were used. Data were analyzed using Pearson correlation, univariate analysis of variance, and multiple regression (enter method).

Results: Life expectancy was positively related to extraversion and negatively related to neuroticism. The agency thinking was negatively correlated with neuroticism and openness to experience. The pathway thinking was positively related to extraversion and conscientiousness. Regression analysis showed that life expectancy was predicted by extraversion and neuroticism. Also, the effect of education levels on life expectancy was not significant in men with cardiovascular disease.

Conclusion: The results showed that the personality traits of men with cardiovascular disease were correlated with their life expectancy. Therefore, it is important to pay specific attention to personality traits and increase of life expectancy to prevent diseases and improve health in society.

***Corresponding Author:**
Enayatollah Shahidi, PhD.
Address: *Department of Psychology, Payame Noor University, Tehran, Iran.*
Phone: *+98 (912) 1767169*
E-mail: *dr.enayat.shahidi@gmail.com*

Introduction

Cardiovascular illness is the most common cause of death in industrialized countries. According to the statistics related to this illness, it has an ascending trend in Iran and through the recent years, the age of sufferers of this illness has reduced as a significant number of patients are youth and middle-aged people. The latter not only disturbs the patients' families, but also imposes a heavy burden over the economy of the society. On the other hand, psychological disorders are common among most of the cardiovascular patients. Undoubtedly, the existence of these mental disorders in the patients deteriorates the physical and psychological status of them and causes their disability in the bio-, psycho-, and social areas [1]. For physical illnesses, in addition of medical cures, psychologists are seeking cognitive treatments, so that in the late decade positivist psychology and health psychology have emphasized on the promotion of health [2] and some of the psychologists have paid attention to conceptualizations, correlative and predictive factors of positivist psychology such as happiness and hope [3]. Hope correlates with physical and mental health and with scales such as positive response to medical intervention, mental health, positive creation, avoidance of stressful life events, joy and happiness in life affairs, and problem solving and predicts them [4]. Snyder, as the founder of hope theory and treatments based on this theory, has introduced the hope as a construct close to optimism and a construct which includes two components of conceptualizing: 1. Potential for designing of pathways to more desirable objectives despite current obstacles, and 2. Potential of agency or motivation for applying these pathways. Hope is the sum of these two components [4]. Hope therapy is derived from Cognitive-Behavioral therapy, solution-focused therapy, and storytelling or Narrative therapy. [5] Hope could have positive effects in controlling pain and physical disabilities of patients. Hope and expectancy activate brain circuits, release Endorphin and enkephalin, and consequently reduce the pain [6].

Five personality factors, which were developed by Mac Kerry and Costa, are read in this order: Neuroticism, Extraversion, Openness to experience, Agreeableness and Conscientiousness. Basically, these 5 factors are suggested as tendencies which have biological background [7]. Neuroticism comes along negative emotions [8]. Extroverted people have social tendencies and loving others, preferring large groups and meetings, courage, activity and verbose are some of their personality traits. In relation to openness to experience trait, it could be said that people with this character are flexible, curious about both internal and external worlds and their life is enriched by experience. The personality trait of conscientious includes thinking before acting, postponing the satisfaction of their desires, complying with laws and norms, and considering priorities in their tasks or missions [9]. Compromise suggests a social and reasonable tendency against aggressive attitude toward others, which includes personality traits like altruism, kindness, trust and humility [10].

Considering prevalence of cardiovascular diseases and their relationship with psychological issues and according to the frequency of heart disease and prevalence of risky factors of cardiovascular disease among males [11], [12], [13] and regarding this fact that the relations of hope and personality traits in men with cardiovascular disease have not yet been studied, current study was formed for examining the role of personality traits in prediction of hope in male sufferers of cardiovascular illness. So, the question of this study was that whether the orientation of personality traits could predict the hope among male sufferers of cardiovascular illness. In this way, personality traits were considered as the predictor variables and the hope as the criterion variable. For justification of the necessity of the present study, it is enough to say that more specialized attention to psychological affairs such as personality types and hope could be a step toward promoting the health, preventing the illness and increasing the individual and social welfare.

Methods

The current study was correlational and its subjects were 200 men with cardiovascular disease, chosen from people who had referred to the medical centers in Tehran. They were selected by convenience sampling method. The inclusion criteria of the study were: men with cardiovascular disease aged between 20 and 40 years with history of disease from 6 months to some years. To observe the ethical considerations, the participants were briefed about the general purposes of the study and they were assured that their data would be kept confidential and the results would be reported in group format and statistically, so that no individual data could be released. For gathering the data following instruments were used:

NEO-Personality Inventory–Revised (NEO-FF-R) questionnaire: Costa and Marcy designed the five-factor questionnaire in 1989. This questionnaire consists of 60 items and it is a shorter questionnaire for marking and assessing five main personality factors. This questionnaire is based on Likert scale (absolutely disagree, disagree, neutral, agree, absolutely agree). Scoring of the short form of NEO-FFI is not the same for all its items. It means that some of the items of short form question-

naire are scored 4 for completely agree, 3 for disagree, 2 for neutral, 1 for agree and 0 for completely agree, whereas some of other items are scored vice versa [14]. NEO-FFI personality questionnaire was executed on 208 American students with a three-month interval by Costa and McCrae and its validity coefficient was reported between 0.83 and 0.75. Long-term validity of this questionnaire has been also assessed. Through a 6-year apart study on the subscales of Neuroticism, Extroversion and Openness to experience, validity coefficients were obtained from 0.68 to 0.83 in reports related to both individuals and couples. Validity coefficients for two factors of agreeableness and conscientious with a two-year interval were reported 0.79 and 0.63, respectively [14]. For standardization of NEO which was carried out by Garusi Farshi on a sample volume consisted of 2000 students from Tabriz and Shiraz universities and medical universities of these two cities, correlative coefficients of 5 basic aspects were reported between 0.56 and 0.87. The Cronbach Alpha coefficient for each one of the basic factors of Neuroticism, Extrovert, Openness to experience, Agreeableness and Conscientious were reported 0.86, 0.73, 0.56, 0.86, and 0.87, respectively. For examining the content validity of this questionnaire, the correlation between two individual report form (S) and observational assessment form (R) was used, which maximum correlation was reported 0.66 for Extroversion factor and minimum correlation was reported 0.45 for Agreeableness [14].

Hope scale: This scale that was prepared by Snyder et al. [15] for measuring hopefulness in 1991 consists of 12 statements and it is executed according to self-reports. Among these statements, 4 statements belong to operational thinking, 4 statements belong to strategic thinking and 4 statements are divertive. Therefore, this scale consists of two dimensions: operational and strategic. Many studies support the validity and reliability of this scale as a measuring scale for hopefulness. The internal consistency of this test ranges between 0.74 and 0.84 and its test-retest reliability is 0.80 while for longer periods of 8 to 10 weeks it could be higher. Internal consistency for operational dimension ranges from 0.71 to 0.76 and for strategic dimension it ranges from 0.63 to 0.80. Moreover, there are many data about simultaneous validity and its predictions. As an instance, its correlation with optimism, achievement of goals and self-esteem questionnaires ranges from 0.50 to 0.60 [16]. For responding to each item, scores from 1 (absolutely false) to 4 (absolutely right) are considered. Items 3, 5, 7, 11 are not scored, items 1, 4, 6, 8 are about pathway subscale and items 2, 9, 10, 12 are about motivation subscale. In this study, SPSS software (version 17) was used for analyzing the data by Pearson correlation, multi variable regression (enter method) and univariate analysis of variance in a statistically significant level of $p<0.05$.

Results

The findings of this study are presented in two categories: Descriptive Statistics and Inferential Statistics. In the Descriptive Statistics category, mean, standard deviation and correlation coefficients are represented and in the Inferential Statistics category, the results of simultaneous multiple regression analysis are presented. The results presented in Table 1 show the mean and standard deviation of men suffering from cardiovascular disease according to their education and hope.

Table 1. The Mean and Standard Deviation of Men Suffering from Cardiovascular Disease According to Their Education Level

Education	Mean	Std. Deviation	N
Illiterate	44.00	0.00	4
High school	40.97	4.41	41
Diploma	39.71	6.15	39
Associate's degree	41.52	4.03	25
Bachelor's degree	42.51	5.09	52
Master's Degree	42.44	6.27	25
Doctorate	44.14	8.36	14
Total	41.66	5.54	200

In order to provide a clearer image of the relationship between the variables of the study, the correlation matrix of variables in the total sample was investigated and presented briefly in Table 2.

According to Table 2, the maximum amount of average was belonged to the hope variable with mean and standard deviation of 41.66 ± 5.54. According to the correlation coefficients, there was a positive correlation between hope and extraversion ($R= 0.247$), and a negative correlation between hope and neuroticism ($R= -0.205$) both at significance level of $P<0.001$. There was a significant negative correlation between the agency thinking components: hope with neuroticism ($R= -0.408$) and

openness to experience (R= -0.275), while the correlation between components of pathway thinking: hope with extraversion (R = 0.289) and conscientiousness (R = 0.226) was significantly positive. The results regarding the regression for the prediction of hope through personality traits are presented in the following tables.

Table 2: Descriptive Statistical Indicators of Subjects' Scores on Tests of Personality Types and Hope

	Mean	Std. Deviation	N	1	2	3	4	5	6	7
Hope	41.66	5.54	200							
Agency	14.77	2.46	200	0.691**						
Pathways	15.70	2.43	200	0.800**	0.455**					
Neuroticism	22.33	5.73	200	-0.205**	-0.408**	-0.094				
Extraversion	29.67	4.62	200	0.247**	0.126	0.289**	0.251**			
Openness to experience	27.33	3.96	200	-0.135	-0.275**	0.048	0.343**	0.271**		
Agreeableness	28.00	3.65	200	-0.079	-0.033	0.077	0.243**	0.410**	0.343**	
Conscientiousness	30.15	3.04	200	0.043	-0.017	0.226**	0.132	0.459**	0.193**	0.449**

**P<0.01
*P<0.05

Table 3: The Regression Model for the Prediction of Hope through Personality Traits

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.415	0.172	0.151	5.107
F (5,194)= 8.081	Sig= 0.0001			

In the regression model, hope was entered into the regression equation as the criterion variable and personality types were entered as predictor variables. According to the information provided in Table 3, the multiple correlation coefficient (R) for the linear combination of hardiness variables and personality types with hope was equal to 0.415, the coefficient of determination was equal to 0.172, the F-ratio was equal to 8.081 which was significant at the 0.0001 level, and (17.2) % of the variance of the variable hope was explained by the model.

Table 4: Regression Coefficients of the Predictive Components of Hope

Model		B	Std. Error	Beta	t	Sig
Life Expectancy	N	-0.223	0.069	-0.231	-3.255	0.001
	E	0.486	0.093	0.406	5.226	0.0001
	O	-0.158	0.103	-0.113	-1.547	0.123
	A	-0.207	0.119	-0.137	-1.741	0.083
	C	-0.055	0.141	-0.030	-0.389	0.698
Agency	N	-0.177	0.029	-0.411	-6.157	0.0001
	E	0.163	0.039	0.306	4.180	0.0001
	O	-0.136	0.043	-0.219	-3.187	0.002
	A	0.037	0.050	0.055	0.739	0.461
	C	-0.069	0.059	-0.085	-1.166	0.245
Pathways	N	-0.076	0.031	-0.178	-2.450	0.015
	E	0.153	0.042	0.291	3.650	0.0001
	O	0.017	0.046	0.028	0.375	0.708
	A	-0.048	0.054	-0.072	-0.897	0.371
	C	0.114	0.064	0.143	1.789	0.075

The regression results in Table 4 show that extraversion (directly) and neuroticism (inversely) are predictors of hope. Extraversion (directly) and neuroticism and openness to experience (inversely) define the agency thinking component of hope. Also, extroversion (directly) and neuroticism (inversely) have significant beta coefficients and predict the components of pathway thinking. Based on the results of regression analysis and comparing the educational condition and hope of men with cardiovascular disease, the difference between men with doctorate degree (M = 44.14, Std. Deviation = 8.36) and men with high school diploma (M = 39.71, Std. Deviation = 6.15) was not significant (df = 6, F = 1.827, Sig = .096).

Discussion

The purpose of this study was to investigate the role of personality traits in predicting the hope of the patients with cardiovascular diseases. Based on the findings of this study, there was a significant positive relationship between extraversion and hope, and a significant negative relationship between neuroticism and hope. According to the results, we can also make the point that increase in extraversion and decrease in neuroticism boost hope. Moreover, increase in extraversion and decrease in neuroticism and openness to experience, result in the increase of the agency-thinking component of hope. Further, increase in extraversion and reducing neuroticism, are related to increase in pathway thinking of hope.

Hope leaves numerous signs and effects. The hopeful individual is physically energetic, leads a life filled with happiness, health and welfare, and is a person prepared to face the hazards of life [17]. According to Anthony and his colleagues [18] hope has a supportive role and leads to adaptive recovery through holding down the negative emotions. The researches results of Groopman [19], and Snyder and Rand [20] on patients with malignant disorders showed that faith and expectancy could potentially have positive effects on the central nervous system, as a result, patients with expectancy for health and recovery are healed faster. Personal factors can underlie numerous diseases such as cardiovascular ones through impact on hopeful or hopeless attitude or how to deal with life events. According to a study done by Korotkov and Hannab [21] personality types are associated with physical health. Halama's study [22] showed that thought related to hope can be a mediator between personality traits (neuroticism, extraversion and conscientiousness) and a satisfying life. Personality may affect health through a variety of ways, but the details are not evident [23]. According to the research conducted by Moghanloo [8], extroverts emphasize more on the positive events of life and as a result are happier than others and benefit from a healthier mental and physical condition, while neurotic people fixate on negative events of life, thereby jeopardize their mental and physical health. According to the results, with an increase in extraversion, heart disease patients' optimism for living increases probably due to the social connection with society members and optimistic people; this causes a boost in hope and promotion of physical health. Some of the evidences reveal that the types prone to coronary heart disease have the features of hostility and anger [24,25].

Cardiologists have raised certain physical factors such as high blood pressure, high cholesterol levels, diabetes, and obesity in association with cardiovascular disease. Several studies suggest that these factors alone do not have a decisive role in incidence of the disease, but some psychological variables provide conditions for its development. Stress and personality are two of the most important of these factors [26].

It can be stated that, neuroticism and negative emotions are mixed together and cause a high reactivity to stress. High negative emotions such as depression, anger, sadness and hostility in these people increase interpersonal problems which reduces the hope. Cheavens and his colleagues [27] demonstrated that hope therapy can increase agency thinking (one of the components of hopeful thinking), meaning of life and self-esteem and reduce symptoms of depression [28]. Pathway thinking is the mental ability and cognitive capacity required to create ways to achieve goals. When the inevitable obstacles appear in the way of the desired objectives, mental flexibility related to the thoughts associated with methods help people remove obstacles and find other routes [16]. The results of this study were in conformity to that of Jokelaet al [29], Samartzis et al [30], Mascaro and Rosen [31] and Halama [22]. In the present study, the effect of education type of men with cardiovascular disease on hope was not significant, which was in conformity to the research done by Poorghaznin et al [32].

Conclusion

Regarding the relationship between mental and physical problems together, it is to some extent possible to control the risk of diseases in people by identifying and determining personality traits, and with the aim of preventing the diseases, by means of appropriate and useful training, physical and mental health of the society members can be estimated more accurately. Considering the fundamental role of personality types on hope of patients, it is also possible to increase hope in patients and in society by means of infrastructure development and providing the proper equipment in medical or educational centers,

and thus, taking an important step toward prevention and improvement, and removing the economic pressures over the society due to the treatment of diseases. Because of the physical condition of some patients and low literacy of some subjects, the questionnaire was read to them by the researchers, which can have an adverse effect on subjects' response. This research has been conducted on men with cardiovascular diseases and cannot be generalizable to women with heart diseases. In addition, the lack of economic and social variables in the studied sample is considered as another limitation in this study. It is suggested that the relationship between personality traits and other psychological variables in these patients and other physical ailments be examined.

Ethical Considerations

Compliance with ethical guidelines

The authors appreciate those who assisted in conducting the study. The current research succeeded in obtaining the code of ethics with the number IR.PNU.REC.1399.031, dated 2020-06-10 from the University Ethics Committee of Payame Nur University..

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Authors' contributions

Study design: Enayatollah Shahidi; Data collection and analysis: Enayatollah Shahidi, Mahnaz Aliakbari Dehkordi, Maryam Yavari Kermani; Manuscript preparation: Enayatollah Shahidi, Mahnaz Aliakbari Dehkordi.

Conflict of interest

The authors declared no conflict of interest.

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