



Original Article

The comparison between dimensions of perfectionism, brain/behavioral systems and resiliency among coronary artery patients and normal individuals

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Abstract

Introduction: Today, there is an increasing rate of coronary artery disease in different societies. The present study aimed to compare between the aspects of perfectionism, cerebral/behavioral system, and resiliency in coronary artery patients and normal individuals.

Materials and Methods: Samples of this causal-comparative study consisted of 300 individuals (150 patients and 150 intact individuals). The patients admitted at Tehran cardiovascular hospitals in 2013. Convenient sampling was carried out. Research tool included Frost Multidimensional Perfectionism Scale (FMPS), Behavioral Inhibitory Systems/Behavioral Activating System scale (BIS/BAS) of Carver White, and Connor-Davidson Resiliency Scale (CD-RISC). Data analyzed through binominal test of logistic regression analysis and U Mann-Whitney test by SPSS software version 18.

Results: Results indicated that there is positive significant relationship between the aspects of perfectionism (practical doubtfulness, parents' expectations, and discipline) and standard variable (coronary disease or healthy condition) ($P < 0.05$). In brain/behavioral system, there is positive significant relationship between behavioral inhibition, escape, and activation with standard variable ($P < 0.05$). Yet, resiliency had no significant difference between two groups ($P = 0.158$).

Conclusion: Specific components of perfectionism dimensions and systems of brain-behavior are associated with coronary heart disease and they can be useful components in the psychological analysis of coronary heart disease.

Keywords: Cerebral/behavioral system, Coronary artery disease, Perfectionism, Resiliency

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Introduction

Coronary artery disease is part of psychosomatic disorders. This disease is the cause of one third of all deaths that each year kills 15 million people out of 50 million deaths because of this disease. Studies indicate that the relationship between anxiety and this disease causes higher arterial blood pressure and lower kidney blood distribution which a stable or temporary trivial anger or fear can affect the function of heart system (1). Coronary artery is a main branch of aorta which sends oxygen to heart. One or more coronary arterial is tightened in condition of coronary heart disease. Friedman and Rosemont started attempts to find the effect of personality in in heart diseases which resulted in finding personality

type A. they believed that the main reason of heart disease is personality type A. this type has characteristics like competitiveness, anxiety, lust for improvement, and thinking with anxiety and according to their view these behavior lead to heart disease. High level heart disease has correlation with these kinds of reactions (2).

One of the issues in psychology which disrupt the social, psychological and physiological area of a person is stress. Stress usually explain the reactions and negative feelings which come with threats and challenging situation. Sometimes the same challenging situations are called stress. The studies have shown that the stress can cause higher function of immune and continuous stress can limit the immune system. The immune response to stress is related to the kind and psychological and physiological reasons of stress. The social psychological factors have attracted the main

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attention which is consisting of stress and emotional behavior such as anger and animosity. There are evidences that suggest a certain type of psychological personality is prone to heart disease and high blood pressure but persons may be genetically potential to have heart-vascular responses. Harmful psychological, stressful, anxiety, animosity and anger stimulus can lead to exude of sodium in kidney and as result malfunction of heart-vascular. The analysis of psychological and social situation of the patients with coronary artery disease indicates that behaviors like anger, animosity, anxiety, depression and certain events in life can cause heart disease and on the other hand, heart disease also has the same behavioral response. Also the emphasis of Diagnostic and Statistical Manual of Mental Disorders (DSM) on psychological factors, make it possible to pay attention to a vast variety of psychological stimulus such as characteristics and sanitation behaviors (3). According to DSM-IV-TR, the coronary artery disease can be considered and analyzed from all aspects.

Because of causes such as emotinal stress, depression, anxiety, animosity, anger, characteristics like type A personality, non adaptive health behaviors, non-efficient problem solving, lack of support, tiredness and life events can accelerate the rate and intensification, delayed recovery, increased disability, even increase in death because of coronary disease.

On the other hand sudden heart disease without any background can be called a stress in patient's life; which chronic nature of the disease, results in disability and movement limitation, huge social and economic problems which sometimes are permanent. The term of perfectionism has drawn attention in psychology for a long time and historically, perfectionism has been analyzed by psychoanalyst theorist. Perfectionism has a role in etiology, maintenance in mental illnesses path, and with mechanisms such as radical criteria which make flexible laws for operation, and behaviors like refusal and repeated analysis of the performance, cognitive thoughts two issues (4), paying attention to choice and increase the criteria for achievements (5). Hollander was one of the pioneers in defining perfectionism. He described perfectionism like this: a person wants better quality of performance than the situation needs from himself and others (6). Short time after this explanation, Burns described perfectionism as cognitive network which includes expectations, description of the events and evaluating oneself or others (7). Frost and co describe perfectionism as a personality structure

which for people prone to choosing criteria and unreal goals. Self- esteem in this people depends on achieving these criteria (8). Gray and McNaughton refer to animal learning and the effect of ecstasy drugs on ecological systems which depend on the completion of reward and punishment mechanism in vertebrate animals head in the frame work of laboratory experiences. Gray believes that mammal's brain controls by three brain behavioral systems which are interconnected, different behavior and at the same time interconnected. These systems respond to different categories of reinforcing events for a specific behavior and they work by different categories of interconnected brain structure which process specific data such as Behavioral Inhibitory System (BIS) Behavioral Activation System (BAS) and Fight Flight System (FFS). Each of these systems can be described in three lines: level of behavior (analysis of input and output system (level of neurology) active and structure of neurological system (cognitive level) active process of system data (there can be forth dimension added to it which is level of experience) together with activation of the system (9) but experimental studies have not had a tool to assess the fourth dimension (10). According to Gray's studies, there can be a relationship between BIS and anxiety (9). Studies show that BAS and BIS were in accordance with each other and were not separate systems and thought that these two motivational systems were related to an emotional continuum (11). Studies show the relation between BIS with sensitivity to punishment, negative and bad affection, and anxiety and depression signs (12-14). BAS related to total activation, extrinsic, increase in good feeling, and sensitivity to reward and experience (12-15). Resilience is called to adaptation with bad and bitter experiences.

Resilience is the resistance to stress which is called growth after hit, is the continuation of the continuum of the resistance against social obstacles. Resilience according to this definition is more than escaping from stress in life and with positive growth flexibility and reaching balance after a disorder of the last situation (16). As a result of Conner's study, resilience is the way to measure the past balanced situation against stress and the factors threatening the psychological health (17). Resilience is according to current theories a structure with different dimensions including taste and personality, with special skills to solve problems (18). According to Masten's believe, when a disaster passes and the basic needs of human are answered, resilience appears and the bad effects are reformed

or lowered or sometimes disappeared (19). However resilience is not the only resistance for threatening situation and is a reaction to dangerous situation but an active attendance is a society. Resilience is the person's capability toward the balance of environment (17). Changes which are parts of the response of stress to organism have some side effects and if the stress continues or intensifies can be damaging. So responses of the stress can have side effects for health. For instance constant physiological allergy can damage heart vein and artery and result in thrombus and lower the resistance toward Microbes and other physiological damages (20). In a study conducted by Azizi et al. the results suggested that there is a significant difference between perfectionism and self organizing system and also in women and men there is a significant difference between perfectionism and self organizing system which is good for men and women (21). According to these findings, it can be concluded that one of factors which has powerful relationship with perfectionism is brain-behavior systems. Also according to Moazen et al., men with coronary artery disease the activity of behavior system, most of them are healthy and there is no difference between these groups regarding inhibitor behavior system (22). Choobdar's studies show that there is a difference between inhibitor behavior systems between patients and healthy people, but there is no difference in activation systems (23). In each illness and disease which are physical, according to health factors it can be said that there is a hidden relationship between psychological, social and physiological structure.

On the other hand, studies indicate that heart disease is one the three main causes of death along with cancer and brain stroke in industrial countries which the psychological factors especially bad psychological experiences was very important. Meanwhile, amongst main factors of cardiovascular diseases are anxiety and stress and in this field, perfectionism, activation inhibitor behavioral systems and resilience are the factors which producing anxiety and stress and they play role in cardiovascular disease. Also, cardiovascular system is very vital for body so each environmental or emotional situation such as anxiety, fear and anger can immediately result in heart beat and blood pressure. Studies in this subject are necessary, because it can show the cardiovascular effects and also help to recognize the personality characteristics which they are important in the psychological studies. In addition, this research can help the knowledge about health and psychology so the

present study aimed to assess and compare perfectionism, resilience and personality traits among coronary patients and healthy individuals.

Materials and Methods

This causal-descriptive research assessed and compared perfectionism dimensions, inhibitor-activation systems and patients as variables with cardiovascular as variable in two groups in patient and healthy people. All the cardiovascular patients and personnel of Shahid Modarres, Imam Hossein, Shahid Rajaei hospitals in Tehran in 2012-13 were entered. Patients with cardiovascular disease and the staffs of the hospital were divided by their age and education. Patients were introduced by cardiologists and head nurses. The sample size was estimated 167 cases based on the formula. In the end, after omitting the disabled questionnaires the scale of the sample of for each sick and healthy of 150 people were evaluated. Inclusion criteria included diagnosis of cardiac disease and aged 15-55 years while exclusion criteria were lack of physical health, lack of tendency and physical disease exceptional cardiac disease.

At first, the list of cardiac patients was provided then regarding to age and education, patients selected and researchers explained about the aim of research and questionnaires. The control group matched to cases in education (illiterate, elementary, Secondary and University). The fulfilled questionnaires were collected to analysis. Subjects assure the confidentiality of information and freedom to participate in the study was obtained from the Research Ethics was observed points. To gain the trust of more than writing name was refused.

Research instruments

- *Frost Multidimensional Perfectionism Scale*: Frost et al. designed this questionnaire in 6 dimensions that includes concern over mistakes (CM), personal standards (PS), parental expectations (PE), parental criticism (PC), doubts about the actions (D), and organization (O). The scale included of 35 items in dimensions (24). In addition, the total score calculated by adding the scores of 35 items. The higher score indicates the higher level of perfectionism. Frost et al. reported the internal consistency of this scale and subscales as 0.90 and 0.73 to 0.93 (8). In Iran, the reliability of this questionnaire internal consistency (Cronbach's alpha) is reported in this study 0.85 (25). In the present study, these consistencies for total scale and dimensions of worry about mistakes, personal standards, and doubt about the activities,

expectations parents, parental criticism and organization were 0.84, 0.73, 0.77, 0.71, 0.68 and 0.87 respectively.

- *The scale of behavioral activation/inhibition systems:* This scale includes 20 items that BIS has 7 items and BAS has 13 items (26). BAS scale consists of three sub-scales: a response to rewards (5 items), drives (4 items), and the pursuit of pleasure and recreation (4 items). According to the theory of modified RST and factor analysis of Heim et al., this scale has five subscales that include behavioral inhibition system-anxiety, system fight/flight/shock/fear, the scale of response to reward behavioral activation system, drag the scale of behavioral activation system, the fun-loving scale behavioral activation system (27,28). Each item of BAS/BIS scored on a Likert-type scale of 4 degrees graded scale internal consistency has been reported BIS 0.74 and internal consistency for the scale BAS respectively, 0.73, 0.76 and 0.66 has been reported (26). In Atrifar study, the internal consistency aromas scale BIS, 0.47 and internal stability of the BAS scale calculated as 0.73, 0.60, 0.78 (29).

- *Connor and Davidson Resilience Scale:* This instrument consisted of 25 items that measures the structure of resiliency in a Likert scale of zero to four degrees) (30). The minimum score in this scale is zero and a maximum score is 100. The results of the pilot study of the psychometric properties of the scale, has confirmed its reliability and validity, internal consistency, and divergent and convergent validity as acceptable although the results of the exploratory factor analysis approved five factors (merit/personal strength, confidence and personal

instincts/tolerate negative emotions, positive emotions reception/security relations, harness, spirituality) (30). The validity and reliability of the Persian version approved in clinical and normal populations (31). In order to determine the validity, the correlation between each score with the total score was calculated then factor analysis was used. The correlation of total score showed the coefficients 0.64 to 0.41 (except item 3). Respectively, in the next step, principal components factor analysis was performed. KMO calculated as 0.87 and the Bartlett's chi-square test was 5556.28. Both indicators revealed sufficient evidence. To determine the reliability of the scale Cronbach's alpha was obtained as 0.89 (32). Furthermore, statistical methods and binomial logistic regression analysis, U Mann-Whitney and SPSS software version 18 was used to data analysis.

Results

The demographic characteristics are seen in Table 1.

Table 1. The prevalence and percentage of education and gender of participants

Variable	Prevalence	Percentage
Female	146	48.7
Male	154	51.3
Illiterate	37	12.3
Middle	56	18.7
High school	114	38
College	93	31

Table 2. The summary of U Mann-Whitney test for perfectionism and resilience in healthy individuals and coronary patients

Dependent variable	Group	Number	Mean	Total	U Mann-Whitney	Z	Sig
Perfectionism	Patient	150	184.82	27722.50	6102.5	6.854**	0.001
	Healthy	150	116.18	5017427			
Resilience	Patient	150	143.44	21516	10191	-1.411	0.158
	Healthy	150	157.76	23634			

**P<0.01

Based on chi-square (6.854) there is difference between health and patients perfectionism (P<0.01) but there is no significant difference between two groups in resiliency (P>0.05).

The F values (3.865) of perfectionism, gender, education and age indicated that data roll-out from matched variance-covariance assumption (P<0.01).

Regarding to results of matched variance-covariance matrix as a main assumption of multivariable variance, there were no its conditions. So data analyzed through binominal logistic regression. The reasons of using this test are: The primary analysis shows that 50% of cases predicted correctly. The obtained model predicts 25.4% and

33.9% of criteria variable (participants' condition). The results of Hasmer and Lemishaw test provide agreement between results and predicted primary results. Regarding to chi-square (6.186) and significance level (0.626) it seems that the obtained model is appropriate.

Based on the different indexes especially B coefficient and parent statistic and significance level it be concluded that the predictive variables of age and education have negative and significant relation with the criteria variable. While, the predictors of worry about mistakes, doubt about actions and parents expectations and discipline have negative and significant relation with the criteria variable. On the other meaning, based on the predictive variables we can predict the participants' health. Based on the BAS/BIS components, the participants' health can be predicted. Table 3 shows the role of each predictor in prediction of health. The predictors of BIS and fun drag of BAS have negative and significant relation with criteria variable but predictors of fight and run have positive significant relationship. It means that we can predict participants health based on the predictors.

Table 3. The variables of BAS/BIS in prediction of health

Predictors	B	Standard error	Parent statistics	df	Sig	Exp (B)
Behavioral inhibition	-0.102	0.034	9.207	1	0.002	0.903
Fight and run	0.280	0.060	21.685	1	0.001	1.323
Reward to response	0.079	0.043	3.325	1	0.068	1.082
Dragging of activator system	-0.031	0.042	0.564	1	0.453	0.696
Fun activation	-0.109	0.041	7.131	1	0.008	0.897
Fix number	0.150	0.746	0.040	1	0.841	1.162

Discussion

The present study aimed to compare the dimensions of perfectionism, behavioral activation/inhibition systems and resiliency in patients with coronary artery disease and normal subjects were studied. The results showed that activation of perfectionism and behavioral inhibition in patients with coronary artery disease and normal people is different in the two groups, but no resiliency.

The findings of Moazzen et al. study (22) indicate a high level of negative perfectionism in patients

with coronary heart disease and confirm the harmful effects of perfectionism thinking and behavior on cardiovascular system which they are concordant to the present study. It is likely that the positive perfectionism starts rewarding, but for some reasons it changed to negative and harmful nation. First, during a time positive perfectionism and lack of focus lead to negative outcomes such as fatigue. Secondary, if positive perfectionist behavior does not lead to a higher goal such as self-esteem, individual may choice a way which leads to negative outcomes. Third, the situations may change so goal achievement concerned as achievable may be difficult. Finally, we concern this issue that a person may evaluate a behavior as good but he/she does not attention to negative effects of perfectionism on the others or physical and mental health (33).

Health can be predicted based on the components of perfectionism, gender, educational level and age. The predictors of age and education and doubt about actions, parents' expectations and discipline have negative and significant relation with criterion variable. It means that reduction in these predictors can enhance health. Tendency to doubt about actions and parents perceptions as whom they have many expectations and great importance about discipline and organization are the characteristics of perfectionists. The results of studies in the field of perfectionism approved their correlation with personal, behavioral characteristics and psychological problems (22).

Self-centered perfectionism relates to try and compete with positive characteristics for the development, self-esteem and self boom on the one hand, and the negative characteristics of narcissism, self-blame, self-criticism, guilt, depression and other mental irritation (21). The coronary patients present these characteristics in different life phases. They concern inappropriate, nonrealistic and high criteria for themselves and their important person such as spouse, children and intimate friends and they are not happy with their performance (34). The coronary patients experience the complex of negative emotions and affect before and after cardiac event so they predisposed to anxiety and stress which lead to presence and develop of disease (22). It be explained that youth and lower education level decrease the probability of coronary disease. In youth age, cells are younger and body immunity is higher but the lower level of education has a main role in people's attitude about themselves and their community because there is relation between perfectionism and academic achievement (33).

Inhibitory means the ability in management and control of conditions as a component of resiliency (32). This ability helps person to manage the stressful conditions and rescue from disasters while achieves to a new level of positive growth and balance (16). On the other hand, the relationship between resilience and health indexes is through spirituality. Spirituality as a component of resilience, increase the persons resistance to stresses (32). Competence and personal integrity as a component of resilience is related to health indexes and psychological vulnerability. Increased competence is related to increased resilience and enhanced mental health indexes. Reversely, the decreased level of competence and personal integrity lead to decreased resiliency and increased psychological vulnerability. Disability in inhibition decreases the power of management in stressful conditions and increases psychological vulnerability through using inefficient coping styles (32) but the other personality factors can lead to vulnerability about problems. During time stresses and anxieties which present a person as resilient may lead to serious vulnerability. The results of Haddadi et al. study indicated that there is positive correlation between resiliency and mental psychological wellbeing but there is negative correlation between resiliency, psychological prostration, depression, anxiety and general health problems (34). It can be concluded that resiliency affect indexes of vulnerability and mental health.

Mental health can be predicted according to the components of behavioral activation/inhibition systems. The predictors of BIS and fun-loving have negative and significant relation with health but fight/escape has significant and positive relation with health. Also, decreased BIS increase health. BAS respond to all conditional and non-conditional pleasant stimuli and motivates the pleasant hope to predictable enjoy (37). BAS as a motivational system motivates behaviors to response of reward stimuli and its function reflects in heart rate. So it seems increased heart rates to stress or stimulant conditions is related to BAS. BAS function motivates the behaviors which they are not seen as enough in rewarding time. So, they seek new aims which they are related to their evaluations. Hyper

activity of cardiovascular system is an outcome of this no ending effort for reward (14).

Choobdar et al. in another research showed that there is no difference between patients and healthy individuals in their activation and behavioral inhibition (23).

Fight /flight/consternation system responses to unconditional and conditional stimuli with the outcomes of fight, escape or consternation. The response is consternation if there is no possibility for fight and escape (38). Gray et al. (9) believe that brain-behavioral functions are not separated in humans. In Corr design about function of brain systems, FFS and BAS activates under automatic and controlled aspects of BIS (38).

It can be argued that despite the aggressive defense and escape are the features of type A personality which predispose these persons to cardiovascular disorders (2), behavioral inhibition in cardiovascular patients is more than normal subjects and it appears that emotional release in cardiac patients is lower than normal individuals and this issue is more related to cultural characteristics.

The limitations of the present study should be considered. Sample was selected by convenience sampling. MANOVA was used because the data is not normal. Uncontrolled social/economic, social support, spiritual beliefs and values are the limitations of this study.

Conclusion

The results indicated that perfectionism components are different among coronary patients and healthy individuals and they are related to health. Also, increased age or education can decrease health and both of them in addition to differences in brain behavioral system can predict cardiac disease. Fun-loving of BAS and FFS are different among coronary patients and healthy individuals. Behavioral inhibition can be an appropriate component in psychoanalysis of cardiovascular diseases. The resilience is not different in coronary patients and healthy individuals but other personality traits such as perfectionism and active BIS with negative effects can destroyed even most resilient persons and they may lead to physical and psychological damages.

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