The relationship between HEXACO personality dimensions and type D personality

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Abstract

The present study was aimed to consider the relationship between type D personality and HEXACO personality dimensions. In a correlational study, 242 students from Islamic Azad University of Tabriz were selected through ratio cluster sampling as the statistical sample. Then the participants filled out HEXACO-Personality-Inventory and Type D Personality Scale. Data were analyzed by Pearson correlation coefficient and multiple regression. Findings showed that there was positive correlation between emotionality dimension with type D and negative affectivity, as well as there was negative correlation between Honesty-Humility, Agreeableness, Conscientiousness and Openness to experience with them.Extraversion had negative correlation with type D and its constituents (social inhibition and negative affectivity) too. Multiple regression analysis showed that HEXACO personality dimensions could predict 23.7% of variance of type D (R^2=0.237).At all, it was concluded that there are correlations between type D and HEXACO personality dimensions; it seems that there are overlaps between them in respect of their nature.

Keywords: HEXACO, Negative affectivity, Personality, Social inhibition, Type D

Introduction

Personality psychologists are interested in the human wholeness, and attempt to disentangle the complexity of different aspects of human behavior. In the study of personality, Costa & McCrae developed Big Five theory of personality. Based on their studies personality traits included: Neuroticism (N), Extraversion (E), and Openness to experience (O), Agreeableness (A), and Conscientiousness (C) [1]. In the recent years, psychologists introduced other dimensions of personality, beyond the Big Five model. Ashton & Lee suggested six dimensions that were somewhat different from the Big Five model, called HEXACO. These six dimensions included: Honesty-humility (H), Emotionality (E), extraversion (X), agreeableness (A), conscientiousness (C), and openness to experience (O) [2]. On the other hand, scientific study of personality in health has also led to identifying different personality patterns, of which some have been conceptualized as personality types predisposed to psychological or physical diseases and psycho-somatic disorders. Type D, as a personality type predisposed to diseases, was introduced by Denollet in 1997. In his opinion, type D is defined by tendency toward negative affectivities and self-expression inhibition [3]. In other words, those with high negative affectivities are reported to have high distress and anxiety, posttraumatic stress, and also, low levels of health [4]. Among cardiac patients, type D is associated with increased psychological distress and unfavorable health conditions [5]. Type D personality is predictable by Behavioral Inhibition System [6]. This means that these people are more responsive to innate fear and aversive conditioning, and their reaction is in the form of, stopping of behavior and passive avoidance [7]. They

also, have higher rates of negative emotions and a tendency to prevent the incidence of emotion, and have introversive characteristics [8]. Type D associations with coronary heart disease have been proven in many studies [5,9]. Also, type D is mildly related to prognosis in cardiovascular diseases [10]. The results of various studies are indicated that high levels of negative emotions play a role in decreasing health of patients with coronary artery disease. It seems that personality differences and psychological factors lead to different reactions to stress and may cause people mortality due to various diseases [9]. On the other hand, in psychopathology, the role of personality traits is always emphasized in causality of various disorders. In studying dimensions of personality, researchers have concluded that there is a relationship between neuroticism and incidence of heart symptoms, and also that dimensions of openness to experience and conscientiousness have negative effects on heart symptoms [11]. Given the role of type D in heart diseases and the results of studies regarding the relationship between personality dimensions and these diseases, it seems that there is a relationship between personality type D and personality dimensions. In studies used Big Five personality model, it has been identified that negative affectivity component of type D has a positive correlation with neuroticism, and social inhibition component has a negative correlation with extraversion factor [6]. Also, a significant relationship has been reported between neuroticism and emotionality with anxiety and depression disorders [12]. The emotionality dimension of HEXACO has four aspects of fear, anxiety, dependency, and sentimentality [13]. However, neuroticism is also associated with negative affectivities such as fear, depression, irritability and impulsivity [3,13], which causes vulnerability, despair, and fear in coping with stress [14]. Meanwhile, the extraversion dimension of HEXACO is identified with sociability, euphoria, need for stimulus, and capacity for experiencing positive emotions [15]. Personality is considered an important determinant of human's physical and emotional health, and patients with psychosomatic disorders (stress related diseases that include a wide range of human diseases), comprise the highest number of patients visiting clinics and hospitals [16]. Also, in previous studies has found the relationships of HEXACO dimensions and personality types predisposed to diseases (e.g. type C as cancer predisposing type) [17]. Thus, by discovering the relationship between type D personality and dimensions of personality, treatment and prevention of some of these psychosomatic diseases will not be as difficult as they currently are. Given that HEXACO model has not yet been sufficiently studied in Iran, this study is an attempt to examine the relationship between type D personality and HEXACO personality dimensions.

Method

This was a correlational study. The population was consisted 26417 students at Tabriz Islamic Azad University during. Using Cohen's formula, with Δ=0.2, $Z\beta$=1.28 and $Z\alpha$=1.65, the sample size was found 214 students [18]. Considering the possibility of attrition, a higher number of participants were enrolled. They were selected according to the proportional random cluster sampling method. Instruments included HEXACO-Personality-Inventory and Type D Personality Scale.

HEXACO-Personality-Inventory (HEXACO-P-I) is a questionnaire that contains 100 items with 6 wide components of Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to experience. Likert scoring style is used in this questionnaire with a range of scores from 1 to 5. Fifty items are marked directly and 50 inversely. In a study by Ashton & Lee [15], Cronbach's alpha was found 0.92 for honesty-Humanity, 0.9 for emotionality, 0.92 for extraversion, 0.89 for agreeableness, 0.89 for conscientiousness, and 0.9 for openness to experience. For the Iranian society, Cronbach's alpha was found 0.8 for honesty-humanity, 0.74 for emotionality, 0.81 for extraversion, 0.73 for agreeableness, 0.71 for conscientiousness, and 0.76 for openness to experience [13]. In this study, Cronbach's alpha for HEXACO dimensions were 0.74, 0.69, 0.75, 0.74, 0.67 and 0.71, respectively.

Type D Personality Scale (DS-14) developed by Denollet, contains 14 items that assess components of negative affectivities and social inhibitions. Its scoring is in Likert

style ranging from 0 to 4. The Crobach's alpha for these sub-scales has been reported 0.88 for negative affectivities and 0.86 for social inhibition [19]. In this study, Cronbach's alpha for type D scale was found 0.73.

Results

Participants of the present study were 242 from Tabriz Islamic Azad University (122 female and 120 male) students with the mean age of 25.8±6.24 years. First, the male/female difference in terms of type D and components of negative affectivity and social inhibition was evaluated. Using independent t-test, the results showed insignificant differences between two genders (Table 1).

Table 1: *The mean and standard deviation of type D and its components in two genders*

	Type D	Social inhibition	Negative affectivity
Honesty-Humility	-0.130*	-0.036	-0.151*
Emotionality	0.228**	0.043	0.257*
Extraversion	-0.475**	-0.256**	-0.483**
Agreeableness	-0.208**	0.036	-0.292**
Conscientiousness	-0.276**	-0.120	-0.297**
Openness to exp.	-0.152*	-0.107	-0.141*

* P<0.05 ** P<0.001

To examine the relationship of type D and its components with HEXACO dimensions, Pearson correlation was used. The results (Table 2) showed a significant correlation between all dimensions of HEXACO and type D and social inhibition; Type D and social inhibition had a positive relationship with personality dimension of emotionality, and a negative relationship with other dimensions (i.e. Honesty-Humility, Extraversion, Agreeableness, Conscientiousness and Openness to experience). Social inhibition, as a component of type D had a significant relationship only with extraversion.

Table 2: *Correlation coefficients of HEXACO with type D and its components*

	Group	Mean	SD	t	df	P
Type D	M	27.72	±5.44	-0.936	215	0.350
	F	28.50	±6.82			
	M	14.76	±2.37	0.532	215	0.601
	F	14.58	±2.64			
Social inhibition	M	12.96	±12.96	-1.528	215	0.128
Negative affectivity	F	13.94	±13.94			

The multiple regression analysis was used to determine the contribution of each HEXACO personality dimension in prediction of type D personality. The results showed that the model obtained from linear combination of personality dimensions was significant (F=13.236, P<0.001), and HEXACO dimensions could explain 23.7% of type D variance (Adjusted R^2= 0.237). Regression coefficients are presented in Table 3.

Table 3: *Regression coefficients of HEXACO in predicting type D personality*

	Standard coefficients		Standard coefficients		
	B	SE	Beta	t	p
(Constant)	48.536	5.084		9.546	0.0001
Honesty-Humility	-0.024	0.042	-0.034	-0.577	0.564
Emotionality	0.079	0.047	0.101	1.691	0.092
Extraversion	-0.291	0.050	-0.385	-5.819	0.0001
Agreeableness	-0.041	0.043	-0.057	-0.937	0.350
Conscientiousness	-0.109	0.052	-0.132	-2.084	0.038
Openness to exp.	-0.009	0.043	0.013	-0.215	0.830

As seen in table 3, Considering beta coefficient and the significance levels, out of predicting variables, the low scores of extraversion (β=-0.385) and conscientiousness (β=-0.132) have significant contributions in predicting type D personality.

Also, examining the results of multiple regression analysis for determining the contributions of HEXACO personality dimensions showed that regression model from combining personality dimensions was significant in explaining negative affectivity (F=16.336, P<0.0001) and that personality dimensions can predict 29.9% of negative affectivity variance (R^2=0.299). The low scores of extraversion (B= -0.351, P<0.0001), conscientiousness (B=-0.160, P=0.010) agreeableness (B=-0.141, P=0.017), and emotionality (B=0.146, P=0.013) can predict negative affectivity component.

Also, regression model derived from combining personality dimensions was significant in explaining social inhibition (F=3.42, P=0.003,) and personality dimensions were able to predict 8.2% of social inhibition variance (R^2=0.082). The results of coefficient analysis showed that low score of extraversion (B=-0.277, P<0.0001) significantly predicts social inhibition.

Discussion

This study aimed to investigate the relationship between each HEXACO personality dimension with type D personality. The results showed that emotionality dimension has a significant and positive correlation with type D and negative affectivity. This finding is consistent with the previous studies [5,15]. Since fear, anxiety, and dependency are sub-scales of emotionality dimension, this finding was to be expected. Those with higher emotionality have higher scores in type D personality, and thus, will experience higher anxiety and irritability. Lack of positive affectivity is identified with low self-belief and dissatisfaction with life [4]. On the other hand, since personality is influential in people's interactions with others, type D personality probably makes it difficult to interact with people in the society. This leads to lower quality of life and health conditions.

Another finding of this study showed that there is a significant and negative correlation between extraversion and type D and its components (social inhibition and negative affectivities). These findings are consistent with previous studies [6,8]. Given the literature, the HEXACO extraversion dimension is characterized by sociability, euphoria, need for stimulus, and capacity for positive affectivity [15], and these characteristics is inconsistent with type D personality; type D personality is defined with high social constraints and verbal inhibition factors, so it can be concluded that high introverted persons have high scores in social inhibition, negative affectivity, and type D. The results also indicated that agreeableness has a significant and negative correlation with type D and negative affectivity, and conscientiousness has a negative and significant correlation with type D and its components (negative affectivities and social inhibition). Previous studies [20] by comparing patients with coronary artery disease, and healthy people have revealed less agreeableness, conscientiousness, openness to experience in them. On the other hand, openness to experience and conscientiousness have negative effects on heart symptoms [11], and type D personality causes reduction in life satisfaction and increases psychological disorders [9] and incidence of coronary heart diseases [9,11]. In their meta-analysis, O'Dell et al. [21] found a positive relationship between type D and major adverse cardiac events, and a negative relationship between type D and health-based quality of life. Agreeableness has an interpersonal nature and essentially is a purposeful behavioral that controls impulses in a prosocial manner [22]. Low agreeableness indicates anxiety, irritability, and high impulsiveness, and accordingly, its negative correlation with type D becomes clear. Low score in conscientiousness also company with negative emotions, sadness and despair, which is justified with high score in type D and negative affectivity. This can be explained in that type D people with high negative affectivity, experience the huge negative emotions and are unable to effectively control their impulses, and thus are more vulnerable to stress. Consequently, their health is more at risk, and they are more than others affected by psychological and psychosomatic diseases.

Other findings of this study indicate a negative and significant correlation between openness to experience with type D and negative affectivity. Openness to experience means active need to

experience new and unknown things [23] and is associated with reduced stress [20]. Type D is also defined with negative affectivity and social inhibitions [3]. People with type D personality, due to their high social inhibition, are likely not to exhibit their emotions, thus society appears as a threatening environment to them, and consequently do not properly comprehend its beauties, and try to avoid new ground breaking ideas, hence, they have a very low openness to experience. Negative affectivity includes fear, depression, irritability, symptoms of physical aggression and impulsiveness [3,12]. Negative affectivity causes vulnerability, despair, and fear in coping with stress [14]. So, type D is company with low openness to experience. Low score in this dimension indicates lack of search for innovative and new solutions to problems, non-acceptance of strange and extreme people, lack of care for nature's beauty, and reluctance to travel [13]. Negative and significant correlation between negative affectivity and openness to experience, can be explained by negative emotions of fear, impulsiveness, irritability, and lack of pleasure in people with low openness to experience. The results of the present study reveal negative and significant correlation between honesty-humility dimension with type D and negative affectivity. The HEXACO honesty-humility dimension is identified with attributes such as honesty, impartiality, sincerity, humility, fairness, and lack of greed and avarice [2]. Denollet introduced type D personalities as anxious people that restrain expression of their sentiments [3]. Type D is defined with increased frequency or intensity of physical complaints, and perception of emotions like depression and anxiety, leaving undesirable effects on health-based behaviors [24]. People with type D have higher rates of negative emotions and tendency to inhibit display of emotions [8]. A high score in honesty-humility dimension is associated with self-righteousness, mutual humanitarianism, trust and reliability [25]. Type D people experience huge amounts of negative emotions, hence, have low self-belief and self-esteem. On the other hand, social inhibition in these people leads to inhibition of emotions and low social interactions. Thus, mutual humanitarianism in them is at the bottom of the trough. Low honesty-humility is characterized with fear, depression, aggression, and impulsiveness, as part of negative emotions and affections [12,24]. Negative correlation between honesty-humility dimension and lack of trust and reliability toward others can be explained by low self-belief in those with low score in this dimension. To summarize, the results showed that 23.7% of type D variance is predictable by HEXACO personality dimensions.

Conclusion

Personality is considered an important determinant of physical and emotional health. Type D personalities, as defined By Denollet [3] as anxious people, experience high levels of negative emotions, exhibit aggression and impulsivity, in coping with stress, and feel despair, fear, loneliness, and inability, in encountering difficulties [12]. Stresses due to type D personality and its components, in the long-term, can cause coronary heart diseases. Since patients with type D personalities show higher tendency to maladaptive behaviors such as smoking, not exercising, and poor diet [26], their quality of life and consequently their psychological health declines. Therefore, identifying type D people and strategies needed for enhancing their quality of life and improving their physical and mental health should take priority. It appears, in rehabilitation of patients with psychosomatic problems, identifying type D people and utilizing interventions to adjust characteristics of this type of personality would be necessary and advantageous. In short, there is a relationship between type D and HEXACO personality dimensions, and According to the results, it was clear that some HEXACO personality dimensions are associated with type D and its components, which meant that HEXACO dimensions were able to predict type D personality, so it seems that there are overlaps in terms of their nature, too. Of course, future studies can accurately investigate the relation and overlap between these constructs. It is recommended to be made clear underlying or moderating role of type D and HEXACO personality in diseases, as an important objective of future studies.

This study, in terms of self-assessment questionnaires and high number of questions, encountered limitations. Also, despite sample

representativeness, considering that samples were taken from one university only (Tabriz Islamic Azad University), generalization results to other populations must be done with care. Based on the study results, high emotionality of type D personality and negative emotions such as sorrow, fear, and aggression could be result to depression and anxiety disorders. Therefore, it is recommended that therapeutic interventions consider characteristics of type of personalities. The results also show high introversion in type D personality. Since high introversion is associated with reserved secrecy, timidity, pessimism, and stagnation (inertia), it is thus recommended that behavioral skills related to control and expression of emotions be taught to people from childhood. Finally, given the significant relationship between HEXACO dimensions and type D, it is recommended that conceptual overlaps between these two be further studied.

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Contribution
Study design: JB
Data collection and analysis: ZE, Kh E
Manuscript preparation: Z E, JB, Kh E

Conflict of Interest
"The authors declare that they have no competing interests."

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