Original Article

The Structural Modeling of the Health and Dangerous Behaviors Based on Psychological Capital and Hardiness among Students of Tehran Universities: Time Horizon as a Mediator

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Abstract

Introduction: The aim of the present study was to evaluate the structural pattern of health-oriented and high-risk behaviors based on psychological capital and hardiness among students of Tehran universities due to mediating role of time horizon.

Method: This study is a descriptive - correlational study. So, 350 students were selected using random sampling and answered the questionnaires. Data analysis was performed using the structural equation modeling method.

Results: Evaluation of the conceptual model of the research using fit indicators showed that the conceptual model is compatible with the measurement model (CFI= 0.94, NFI= 0.90, and RMSEA= 0.073). The research findings showed that the hardiness and psychological capital have a significant effect on both health-oriented and high-risk behaviors both directly and indirectly through the time horizon. Also, the time horizon has a significant direct effect on healthy and high-risk behaviors.

Conclusion: According to the obtained results and the appropriate fit of the hypothetical structural model, psychological capital, hardiness, and time horizon can be considered as the main factors affecting health-oriented behaviors and high-risk behaviors. It is better to use these factors in the design of prevention programs and interventions in the field of health.

Declaration of Interest: None

Keywords: Health-oriented behaviors, High-Risk behaviors, Psychological capital, Hardiness, Time horizon.

Introduction

*H*ealth is a dynamic concept which includes physical, mental, social and spiritual dimensions. Health is not only the most important issue for human beings at the individual level, but it is also the top of policy-making at the national level. Thus, increasing and ensuring people's health in a society is one of the main components of any country's progress and development. The following factors can be mentioned as the health-affecting factors: inheritance, environmental and social factors, lifestyle, religion, socioeconomic class, and age, gender, working conditions, culture and education (1, 2).

Lifestyle is one of the most relevant factors to individual's health. Lifestyle consists of clear and definable behavioral patterns which are determined by the interaction between psychological characteristics, social interactions, socioeconomic conditions, and the individual's living environment; and lifestyle is generally a reflection of a person's life experiences, values, attitudes, and expectations (3). In recent years, lifestyle has become one of the world's leading research topics. In addition, improving lifestyle all around the world was set as one of the World Health Organization's goals in 2020; to this end, countries need to dedicate part of their research and public health activities to identify and promote individual and social factors affecting the lifestyle of the society and take practical actions to promote and enhance the health-promoting behaviors (4, 5).

People's lifestyle, on one hand, can be divided into two main parts: health-oriented behaviors and high-risk behaviors. Health-oriented behaviors include various dimensions such as proper nutrition, exercise and preventive behaviors related to health and it is considered as a guide to prevent health problems and a factor to ensure the highest level of health (6). On the other hand, high-risk behaviors consist of poor diet, inactivity, low physical activity and smoking. These are the main risk factors for heart disease, hypertension, obesity, type 2 diabetes, tooth decay, stroke and a number of cancers (7).

Hardiness is one of the important components that can play a role in health-related behaviors. Kobasa (8) coined the term "psychological hardiness". In describing this term, he believes that the psychological hardiness is a personality trait and the one who has it is able to effectively solve interpersonal problems and stress and will use it as a source of resistance and as a protective shield when face up the situations (9). He thinks that those who experience high stress without developing a particular disease have a special structure that distinguishes them from people who develop the disease because of stress. In his opinion, those with hardiness will make use of hardiness, active conversion coping strategies in dealing with stressful situations (10).

Psychological capital is another concept in positive psychology and can make a person's structure stronger and more cohesive. Psychological capital is a positive individual psychological state which can be defined by having the following traits: self-confidence, optimism, hope and resilience. The psychological capital also refers to a person's positive evaluation of the situation and the probability of success

which is on the basis of motivational effort and perseverance (11).

The time horizon is another factor has attracted the attention of researchers in recent years and can play an important role in health-oriented and high-risk behaviors. Recognition of the theory of time horizon in psychology led to the formation of different meanings related to the time horizon in people's lives. How these different dimensions and attitudes are formed in relation to the time horizon in individuals has a significant impact on the type feelings people have about their lives and how they use their opportunities (12).

The time horizons (Expectationism) or in other words, the attitude toward the future is one of the related variables to the human performance. Expectationism means the perceived value of each person about their future compared to the present; that is, doing specific expectations, actions, and behaviors in a timely manner for the future so that the person deserves to receive a certain incentive.

The Expectationism is a preventative strategy to reduce illnesses related to the lifestyle, accidents and violence in the population, which is based on the increase in people's perceived value of the future; this means that the more the present is valuable and important for a person, the person is expected to be more cautious and more committed to health-related programs for his/her future. Evidence suggests that among those who value the future more, the useful health habits are more common; and those with poor psychological reactions to their future have poorer quality of life and general health (13).

The higher is the perceived value of the future than the perceived value of the present the person is expected to be more cautious. Evidence suggests that useful health habits are more common among those who value the future very much (13). In other words, according to the time horizon's concept and the components it covers, it can be considered that if the person has a positive attitude toward the future and the future is promising for him/her then in order to achieve a bright future, he/she will choose a lifestyle with more health-oriented and self-care behaviors in the field of physical and mental health and will avoid high-risk behaviors.

It can be assumed that if a person has more hardiness and higher psychological capital, then he/she will not get disappointed and despaired when facing the challenges and will be looking for a solution and his/her opinion the future is not lost based on the problems of the present and will have more positive and higher time horizon. Accordingly, in this study, the time horizon is considered as a mediator variable.

Based on what's mentioned above, it is necessary to conduct a comprehensive research to examine the role of the psychological components of a health-oriented lifestyle and the interaction between them. Lack of a research-based model with empirical support that can be the basis of training and interventions related to a health-oriented lifestyle is clearly evident in the background of this field. Therefore, the aim of this study wa to identify the psychological components of a health-oriented lifestyle based on the information obtained as well as to provide a theoretical model for these components and examine the fit of the proposed model according to the actual data. The hypothetical model of the present study is shown in Figure 1.
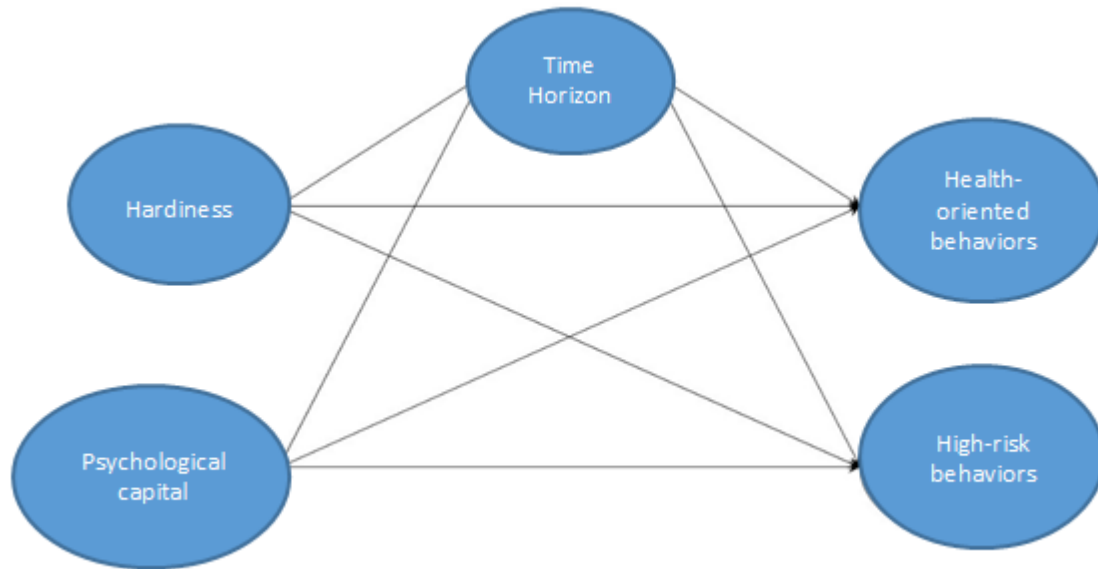
Figure1. Research Hypothetical Model

1. Materials and Methods

This is a correlational-applied study and the data were collected using the Structural Equation Modeling Method. All students of Tehran's State and Azad universities at all levels of education were included in the statistical population of this study. The minimum sample size for the present study based on the structural equation modeling criteria was 250 people (14). Therefore, 350 people were selected taking into account a drop of 15% and among them the data of 320 people could be analyzed and it was done.

Health-oriented Behavior Questionnaire

This questionnaire was translated by Mohammadi Zaidi, Pakpour Haji Agha and Mohammadi Zaidi (15) using the approach of Jones et al. and the validity, reliability and standardization of the Health-oriented Behaviors Questionnaire was performed. This 52-item questionnaire has 6 subscales (self-actualization and spiritual growth, responsible for health, interpersonal relationships, stress management, exercise, and physical activity and nutrition). To answer each question, a continuum from "(1) never - (4) always" is considered. The score of each subscale is obtained from the average score of the answers given to the questions of the subscale and the total score from the average answer to all 52 questions. The Cronbach's alpha coefficient for the whole instrument and subdivisions is 0.82 and 0.64 to 0.91, respectively. All items had acceptable case-total correlation (>0.34). Test-retest results showed the stability for Health Promotion Lifestyle Questionnaire and its subdivisions.

High-Risk Behaviors Questionnaire

Young's Risk Behaviors Scale (YRBSS) is used to measure high-risk behaviors which is designed and adjusted in 2010 adopting from US Control Disease Center High Risk Behavior Questionnaire. The form used in this study consisted of 22 items that evaluates the severity of high-risk behaviors in the last three months in areas of violence (carrying cold weapon and

participating in a physical conflict), smoking, alcohol use, nutrition and physical activity as well as evil friends. Brenner et al. (16) obtained the reliability of this questionnaire by test-retest method in an interval of two weeks and by calculating the kappa coefficient for all items between 6.23 - 5.90. Bakhshaei et al. (17), in Iran, have obtained its reliability using test-retest method and have calculated kappa coefficient for all items 0.85. The validity of this questionnaire confirms the compatibility of this questionnaire with its expected objectives.

Psychological Capital Questionnaire (PCQ)

This questionnaire was developed by Luthans, Youssef and Avolive (18) to measure psychological capital and it includes four factors: hope, resilience, optimism and self-efficacy. Each subscale contains 6 items and a total of 24 questions. Hashemi Nosratabad, Babapour Khairuddin and Bahadori Khosroshahi (19) have reported the reliability of this questionnaire based on Cronbach's alpha coefficient of 85%. Luthans and Avolive (20) have used confirmatory factor analysis and have confirmed the validity of four factors desired by the developers.

Psychological Hardiness Questionnaire

Kiamarsi, Najarian and Sohrabizadeh Honarmand (21) have developed and validated this scale At Shahid Chamran University in Ahvaz. The questionnaire has 27 items and each of them has four options: never, rarely and sometimes and most of the time. In scoring for each item the values of 0, 1, 2, and 3 are considered, respectively. Except for expressions 6, 7, 10, 13, 17, 21 which have a negative factor loading and are scored in reverse way. The score range in this questionnaire is 0 to 81.

A high score on this questionnaire indicates high psychological hardiness in person. Kiamarsi et al. (21) calculated the reliability coefficients of the questionnaire are calculated by two methods of retest and Cronbach's alpha 0.84 and 0.76, respectively. Ghafouri, Rasfadrani, Kamali and Nouri (22) calculated the validity of this test by narrative method simultaneously with three criteria of general anxiety scale, Maslow's depression and self-actualization questionnaire. The obtained coefficients were 0.65, 0.67, and 0.62, respectively, all the coefficients were significant at the level of $p < 0.001$.

Time Horizon Questionnaire

Zimbardo Time Perspective Inventory (ZTPI) was developed by Zimbardoand Boyd in1999; this inventory actually consists of six factors and a total of 66 items. This inventory has five subscales which include Past Negative (PN), Present Hedonistic (PH), Future, Past Positive (PF) and Present Fatalistic (PF). This questionnaire is scored based on the Five-point Likert scale (completely agree - completely disagree). To evaluate the validity and reliability of the questionnaire, two methods of Cronbach's alpha coefficient and retest with a time interval of four weeks were used, respectively. Different sections of the questionnaire and alpha coefficients obtained from the study of Zimbardoand Boyd (23) are as follows: Negative past with 10 items and alpha coefficient of 0.82, Past Positive with 9 items and alpha coefficient of 0.80, Present Hedonistic with 15 items and alpha coefficient of 0.79, Present Determinist with 9 items and alpha coefficient of 0.74, Future with 13 items and alpha coefficient of 0.77, Transcendental Future with 10 items and

alpha coefficient of 0.68 to 0.83 were obtained using Cronbach's alpha method 0.70 to 0.80 in the retest method. An Alpha coefficient of 0.63 to 0.84 was obtained in different samples.

2. Structural Equation Modeling presuppositions:

The realization of the univariate and multivariate normality is important presuppositions of this statistical approach. Univariate normality is usually examined by analyzing the skewness and kurtosis of the obvious variables. Skewness of variables is in the range of -1.54 to -1.24 and their kurtosis is in the range of -0.55 to 3.97. Chou and Bentler (24) consider the cutoff point of ±3 appropriate for skewness. The cutoff points higher than ±10 for kurtosis are problematic for this index (14). The Relative Multivariate

Kurtosis index which is calculated to evaluate the supposition of multivariate normality is 1.53. Bentler (25) believes that if the value of this index is not more than 3 then, the multivariate normality is realized. The correlation matrix between obvious variables shows the multi-colinearity between them and correlation coefficients higher than 0.85 make it difficult to estimate the model correctly (14). The correlation coefficients are in the range of -0.37 to 0.65. Preliminary studies showed that the data are appropriate to use the structural equation modeling method and the method of estimating maximum likelihood. The correlation matrix between the latent variables of the research along with their average and standard deviation can be found in Table1. As this table shows, all correlations include a significant value ($0 \geq 0.699 \geq 0.722$).

Table1. Correlation matrix between research variables

	Variables	1	2	3	4	5	M	SD	Skewness	kurtosis
1	Hardiness	1					40.45	10.16	-0.75	-0.04
2	Psychological capital	0.242[**]	1				104.34	18.09	-1.45	3.01
3	Time horizon	0.267[**]	0.480[**]	1			139.96	17.99	-2.37	6.86
4	Health-oriented behaviors	0.396[**]	0.385[**]	0.495[**]	1		138.93	19.34	-0.60	0.52
5	High-risk behaviors	- 0.392[**]	- 0.378[**]	- 0.399[**]	- 0.367[**]	1	63.93	18.60	1.94	5.26

Measurement model (confirmatory factor analysis):

The Fit are calculated for the measurement model before evaluating the structural model. Measurement model will determine the relationship of obvious variables with latent variables. This model is evaluated using confirmatory factor analysis method.

The fit indicators of the measurement model, which is shown in Table2, suggest a very good fit of this model. Thus, the obvious variables have the necessary ability to operate the latent variables.

Also, the structural model evaluation indicates the good fit of this model. Fit indicators for this model are shown in

Tables2. As the contents of this table show, all indicators are within the good fit of the model.

Table2. Fit indicators of measurement model and structural model

	Chi-Square	DF	X2/Df	RMSEA	SRMR	CFI	NFI	IFI
Measurement model	99.505	205	2.46	0.073	0.064	0.94	0.90	0.94
Structural model	54.562	210	2.67	0.078	0.068	0.93	0.90	0.93

Structural model: direct effects

Figures 2 and 3 illustrate the hypothetical structural model along with the standard and t coefficients. As it can be seen, hardiness and psychological capital as exogenous variables with standard coefficient of 0.21 (t-values = 2.96) and 0.51 (t-values = 6.19) influence on time horizon, i.e. mediator variable. The time horizon with standard coefficients of 0.38 (t-values = 4.50) and -0.29 (t-values = -3.21) affects health-oriented and high-risk behaviors, respectively. Additionally, hardiness and psychological capital with standard coefficients of 0.25 (t-values = 3.92) and 0.27 (t-values = 3.50) influence on health-oriented behaviors and with standard coefficients of -0.34 (t-values = -4.61) and -0.20 (t-values = -4.43) have effect on high-risk behaviors and given the t-statistic (t-values) of all direct paths in the structural model are greater than 1.96 and smaller than 1.96, therefore, all paths are statistically significant.
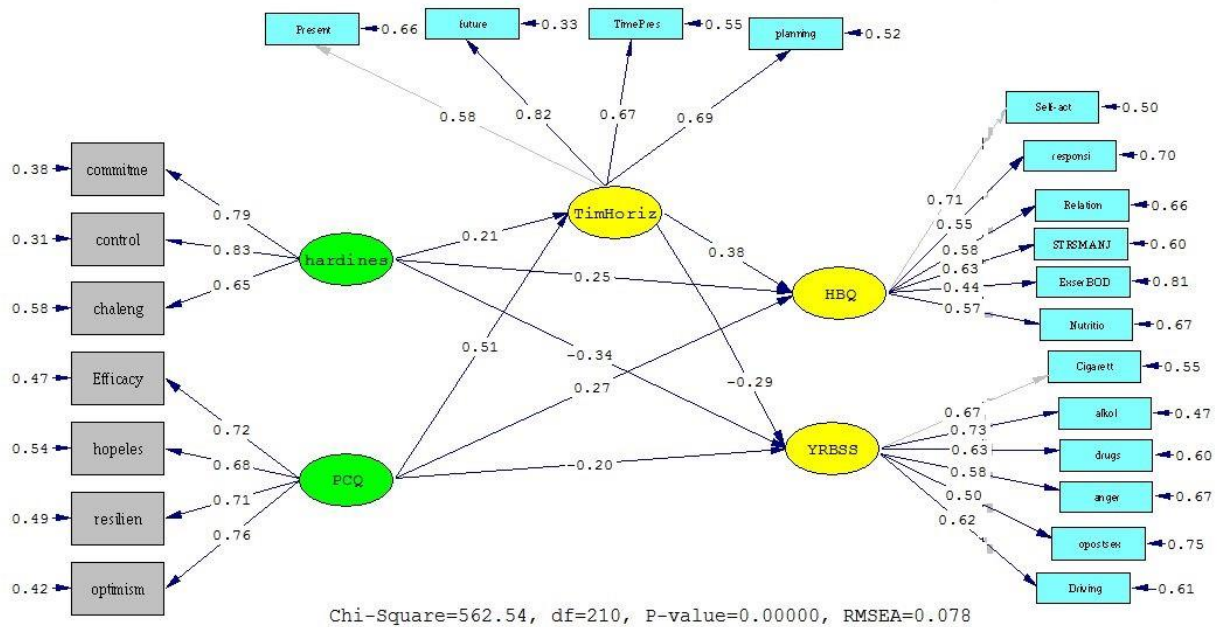

Chi-Square=562.54, df=210, P-value=0.00000, RMSEA=0.078

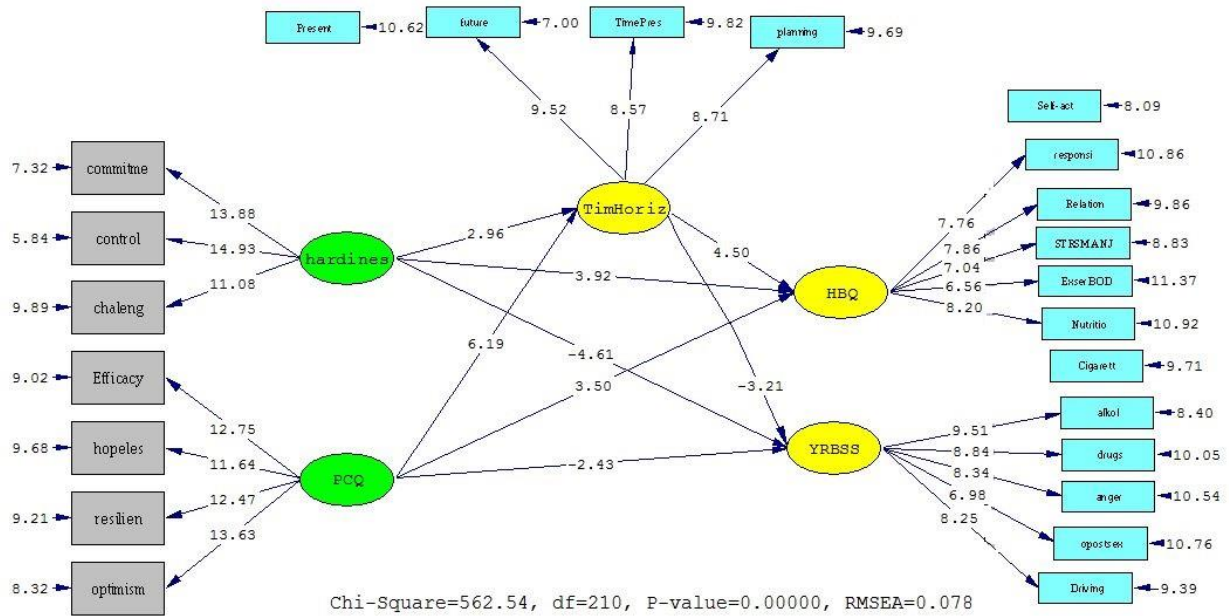**Figure2. Structural model of research with standard coefficients**

Figure3. Structural model of research with T-Value coefficients

Mediation model evaluation: indirect effects

The Bootstrap test was used to evaluate the significance of mediating effects. The significance of this test can be evaluated both by referring to the significance level and by examining the bootstrap limits. If the bootstrap limits have the same signs, it means whether both are negative or positive, the mediating effect is significant. Table3 shows the results if this test.

Table3. Bootstrap test results for mediating effects

Independent variable	Intermediate variable	Dependent variable	Bootstrap's limits		Estimation error	Effect size	Significance level
			Upper limit	Lower limit			
Hardiness	time horizon	Health-oriented behaviors	0.019	0.195	0.053	0.079	0.023
Psychological capital	time horizon	Health-oriented behaviors	0.373	0.093	0.085	0.193	0.003
Hardiness	time horizon	High risk behaviors	-0.038	-0.243	0.062	-0.60	0.045
Psychological capital	time horizon	High-risk behaviors	-0.139	-0.475	0.102	-0.147	0.006

The contents of Table 3. Show that the effect of hardiness and psychological capital is statistically significant due to the mediation of time horizon on the endogenous dependent variable of health-oriented behaviors. Because the upper and lower limits of the bootstrap test were both positive and the value of zero is not between these two limits. It can therefore be concluded that the hardiness and psychological capital have positive and significant effect on health-oriented behaviors due to the mediation of the time horizon. On the other hand, hardiness and

psychological capital have a significant effect on the dependent variable of high-risk behaviors with mediation of time horizon, since the upper and lower limits of the bootstrap test were both negative and the zero value is not between these two limits. It can be therefore concluded that the hardiness and psychological capital have a positive and significant effect on high-risk behaviors due to the mediation of the time horizon.

 Conclusion

This research was done to investigate the structural model of health-oriented and high-risk behaviors based on the psychological capital and hardiness in Tehran universities' students given the mediating role of the time horizon. The main hypothesis of this research was that whether the time horizon can mediate the effect of psychological capital and hardiness on health-oriented and high-risk behaviors or not?

The results of this study indicated that the psychological hardiness plays an important role in a person's health. The hardiness has components of commitment, control and challenge. A person with high psychological hardiness believes that he/she can dominate his/her environmental conditions and make them under his/her control. On the other hand, he/she considers all life's changes and adversities as a natural challenge in life (26). Psychological hardiness's fundamental components increase life expectancy (27), resilience (28) and cognitive flexibility (29) in person. Hence, psychological hardiness can play a pivotal role in the occurrence of health-oriented behaviors and avoiding high-risk behaviors. On the other hand, the findings of this study showed that part of this effect is reached by the mediation of time horizon. It is

appeared that a person with psychological hardiness appreciates the value of the present and the future very well and can have an appropriate plan to reach his/her goals in the future.

Such a positive time horizon underlies a healthy lifestyle and finally, the positive health-related consequences will be achieved. Moreover, people with psychological hardiness will maintain the motivation and meaning of their life and create new ways to achieve their goals despite the difficulties and challenges they may experience in achieving the goal. This is obviously consistent with a vision based on a positive assessment of the future and underlies the adherence to health-oriented behaviors.

The results of the present study indicated a significant effect of psychological capital in increasing health-oriented behaviors and reducing high-risk behaviors. The psychological capital is related to the characteristics such as a person's belief in his / her abilities to achieve success, perseverance in pursuing the goals and resilience to adversities (30). People with psychological capital have reached a positive belief about themselves and are less affected by daily events and environmental issues (30). Psychological capital also gives meaning to a person's life and consequently, it perpetuates his/her attempts to change stressful situations (31). Psychological capital makes a person not to avoid and abhor the challenges and be consistent to face them as well as have a high acceptance of the life's realities and not give up early in facing with the life's failures and problems (32).

On the other hand, the findings of the present study show that the time horizon of psychological capital and hardiness will

mediate the increase of health-oriented behaviors and the reduction of high-risk behaviors. Those with high hardiness and psychological capital appreciate the value of their present and make the most of it; at the same time, they highly appreciate the future and plan well for it. This horizon makes a person to be pushed toward the health-oriented behaviors and to be avoided high-risk behaviors.

These are the important components in people's adherence to health-oriented behaviors: the concept of time horizon, appreciate the value of the future and plan for the future. It seems that the more the value of the future increases compared to the present, the health-oriented behaviors can be better managed and the related diseases can be better prevented and controlled. Qasemi, Namdari, Qoreishian and Amini (33) conducted a study and examined the relationship between time horizon and adherence to self-care behaviors in patients with type 2 diabetes. The results of their study suggested that higher value for the future and planning for it are strong predictors of patients with type 2 diabetes to self-care behaviors. One the other hand, it appears that balanced assessment of the future can be a sign of mental health and psychological well-being. Rose et al. (34) showed on their study that believing in the effectiveness of future programs and plans and optimism of the life's visions are related to the managing the health-related behaviors, adhering to them and thus high health.

As a results of the findings it can be said that unhealthy habits depend on people's orientation towards the future. People will care their behavior on the basis of their expectations of the future. People's beliefs and attitudes are their reasons of following health-related behaviors and avoiding high-risk behaviors. These attitudes influenced by people's overall worldview about themselves and the future and their assessment of the consequences of health-oriented behaviors. Expectationism or time horizon focused on the future is a preventive strategy to reduce lifestyle-related diseases. Thus, the greater the perceived value and importance of the future is than the perceived value and importance of the present, the person is expected to be more cautious about high-risk behaviors and to be more adhered to the health-oriented behaviors. Research evidence shows that those highly appreciate the value of the future will have healthier behavioral habits. On the other hand, those do not have a good vision to the future have poor quality of life and health (35). McCord and Brandenburg (36) also showed that those with chronic illness who believe the disease will not affect their future life outcomes and it is better to think less about the future and instead focus more on the present, are less adhered to their treatment and self-care behaviors and they have no motivation to be trained and aware of their disease.

Hence, in order to increase the health indicators in people it is necessary to reform the people's attitudes and beliefs about the future and the hardiness, optimism and positive attitudes about the future need to be encouraged. People motivation for health-oriented behaviors their appropriate attitude towards the future can be the basis of many treatment programs based on lifestyle modification.

The findings of the present study should be interpreted in the context of research limitations. Due to the structural equation modeling is a method based on solidarity,

then the casual relationships can't be inferred from the results of the present study. Also, the statistical population of the present study is limited to the students of Tehran universities and this limitation reduces the generalizability of the research results.

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