

The Relationship Between Approach-Avoidance Behaviors and Hardiness

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Article information	Abstract
<p>Article history: Received: 1 July 2011 Accepted: 21 Sep 2011 Available online: 24 Oct 2012 ZJRMS 2012; 14(10): 61-65</p> <p>Keywords: Success Active avoidance Passive avoidance</p> <p>*Corresponding author at: Department of psychology, Payam-e-Noor University of Tehran E-mail: meimandmahtab@yahoo.com</p>	<p>Background: Hardiness as a personality trait is an important factor in directing people to success. An explanation for this trait is the psychobiological explanation including the Gray's theory of Brian/behavioral systems. This study has examined the relationship between the Brian/behavioral systems and hardiness in successful people.</p> <p>Materials and Methods: In this study, 60 successful students (medical students in their final two years of medical school) and 60 ordinary subjects were studied using two personality questionnaires (Gary-Wilson and Hardiness Questionnaires) as well as Pearson's correlation statistical technique, regression, and independent <i>t</i>-test.</p> <p>Results: Data analysis showed that the activity level of behavioral activation system ($p=0.002$: active avoidance and $p<0.001$: approach behavior) and hardiness ($p<0.001$) is significantly higher in successful people than ordinary subjects and that there is a significant relationship between hardiness and two components of behavioral activation system and one component of behavioral inhibition system (i.e. active avoidance) ($p<0.01$).</p> <p>Conclusion: According to the findings, only two components of approach behavior and active avoidance can predict the variable hardiness. However, these two components are considered as only one of the predictors of success and there are undoubtedly many other factors involved in this regard. Overall, this study can lead to the identification of new factors involved in the success occurrence that consideration of them can help understanding the individual differences in order to perform effective psychological interventions to improve the level of effort and success in people.</p> <p>Copyright © 2012 Zahedan University of Medical Sciences. All rights reserved.</p>

Introduction

Hardiness is a personality trait with three components including commitment, control of life events and challenge [1]. Hard people consider life targeted, have a sense of control over events and gain more success in education, sports and economics fields [2]. Successful people have also plan. They are hard working with strong incentives for success [3]. Thus, hardiness as a personality trait is an important factor in directing people to success [4]. There are several explanations about this trait including psychobiological explanation among which the Gray's theory of Brain/Behavioral systems is highly important [5, 6].

According to Gray's model, there are three systems in different brain structures: A. Fight/Flight System (FFS) which is sensitive to unconditioned aversive stimuli [5, 7, 8]. B. Behavioral Inhibition System (BIS) which is activated by conditioned threatening stimuli or stimuli related to punishment and non-reward [9] and is a result of the noradrenergic and serotonergic afferent pathways' activity [10] and corresponds to feelings of anxiety, worry, rumination and avoidance behaviors [11]. Highly sensitive people in this system predict the probability of more negative events for them; thus, they avoid participating in challenging activities [12] and fail to deal

with the situations [13]. C. Behavioral Activation System (BAS) which has several dopaminergic pathways and Cortico-Striato-Pallido-Thalamic Circuits in brain [5, 14-17] and is activated by pleasant stimuli related to reward or non-punishment and is associated with affectivity, sense of hope and pleasure and approach behaviors. Two behavioral components of this system include approach component and active avoidance (punishment avoidance) [5, 18]. It is assumed that this system is associated with extraversion motivation and searching the approach behaviors and emotions [16, 18] and leads the individual towards the confrontation and an effort to overcome barriers and search for desirable goals [13]. Thus, BAS system can prepare a background for the effort to overcome difficulties and search for the reward activity and finally achieve success and progress that all seems to be present in the hard successful people. Therefore, given the lack of investigation on this issue, the present study investigates the relationship between hardiness and Brain/Behavioral Systems of successful people and compares it with the control group under three hypotheses: 1. People with higher academic achievement enjoy a greater hardiness compared to ordinary people; 2. The behavioral activation system of those with academic

achievement is more active than that of ordinary subjects and 3) There is a relationship between Brain/Behavioral Systems and Hardiness of successful people.

Materials and Methods

The study population of this research consists of the 25-40-year-old medical students of the city of Bushehr spending their final two years of medical school at Bushehr University of Medical Sciences during the academic year 2010-2011. The control group consists of the ordinary employees of state organizations of Bushehr province with no considerable academic achievement (below the associate's degree). Using Morgan's table for determining the sample size and the cluster random sampling method, 60 PhD students (University of Medical Sciences) and 60 ordinary subjects were selected as the sample group. It should be noted that after selecting the sample group and receiving the subjects' agreement to cooperate with the researcher, the research questionnaires were completed simultaneously, individually and confidentially (anonymously) by them. In this study, research was of both correlational (investigating the relationship between variables) and post traumatic (comparing the groups) type. Two research tools have been used in this study. First one is the personality questionnaire of Gray-Wilson which was constructed by Wilson, Barrett and Gray. This questionnaire contains 120 questions which in order to review the activity of the components of behavioral inhibition system (two components of passive avoidance and extinction), behavioral activation (two components of active avoidance and approach) and fight and flight (two components of fight and flight), 20 three-option (Yes/No/don't know) multiple-choice items were assigned to each component. The internal consistency of questionnaire has been reported acceptable and about 0.6 to 0.7 [5]. Its Cronbach's alpha coefficient has been also reported 0.65 to 0.78 [19].

The second tool is the questionnaire of hardiness constructed by Kiamarsi, Najarian and Mehrabzadeh in the city of Ahvaz for measuring the psychological hardiness. This questionnaire consists of 27 four-option (Never/rarely/sometimes /usually) multiple-choice items.

These options are respectively scored as 0, 1, 2 and 3. However, the options of items number 6, 7, 10, 13, 17 and 21 are scored reversely (3, 2, 1 and 0). To investigate the reliability and validity of the questionnaire, the internal consistency method has been used. The Cronbach's alpha for all male and female samples was respectively 0.76 and 0.74 and the correlation coefficient of test and retest for all male and female subjects was estimated 0.84 and 0.85, respectively [20, 21].

Each person obtains a total score in this questionnaire. The higher scores indicate greater hardiness. In order to investigate the relationship between the personality factors of Gray-Wilson and hardiness and to compare these variables between two groups, the statistical method of Pearson's product-moment correlation, regression

analysis and independent t-test in software SPSS-17 were used.

Results

The results of descriptive data analysis indicated that in the group with academic achievement, 58% (35 subjects) were male and 42% (25 subjects) were female. The average age in this group was 34 years old with a standard deviation of 6.3. To examine the research hypothesis I and II, a summary of results from the comparison of the brain/behavioral system components of the sample group are presented in table 1. As shown in table 1, there is a significant difference between hardiness of successful people compared to ordinary people ($p=0.0001$) and successful people enjoy a greater hardiness. Thus, the first hypothesis (i.e. people with academic achievement have greater hardiness compared to ordinary subjects) was verified.

Table 1 also shows that there is a significant difference between components of brain/behavioral systems of those with academic achievement compared to ordinary subjects and the activity level of behavioral activation system in successful people is significantly higher than ordinary subjects ($p=0.002$: active avoidance and $p=0.0001$: approach behavior). Also, the activity level of behavioral inhibition system in successful people is significantly lower than ordinary subjects ($p=0.0001$: passive avoidance and $p=0.001$: extinction), fight ($p=0.029$) and flight ($p=0.0001$). Thus, the second research hypothesis (i.e. the activity level of behavioral activation system of those with academic achievement is higher than ordinary subjects) was also verified. The data related to the third hypothesis testing (examination of the relationship between brain/behavioral system activity and hardiness in successful people) is presented in table 2. The third hypothesis of research that investigates the relationship between Brain/Behavioral systems activity and hardiness in successful people was tested through the Pearson's correlation. As specified in correlations matrix, there is a significant positive relationship between hardiness and both components of behavioral activation system at level of $p<0.01$ ($p=0.003$: approach component and $p=0.001$: active avoidance component) with a CI (Confidence Interval)=0.13-0.57 for the approach component and CI=0.18-0.61 for the active avoidance component. In addition, there is a significant negative relationship between hardiness and one component of behavioral inhibition system (passive avoidance) at a level below 0.05 ($p=0.013$) with a confidence interval CI=0.54-0.8. Therefore, it can be said with a confidence level of 95% that in each variable (approach component, active avoidance and passive avoidance) the r value is inside the above mentioned intervals. These correlations indicate that the greater the passive avoidance is the less hardiness the individual will have and the greater the active avoidance and approach behavior are the greater hardiness the individual will have. According to table 2, there was no significant relationship between hardiness

and fight/flight system components and extinction component (in behavioral inhibition system).

To analyze this relationship more accurately, the stepwise regression analysis was used in which the changes of hardiness variable were studied based on the activity level of behavioral activation components. The results of this analysis show that F-ratio resulted from this analysis is significant ($p=0.001$) in first step (12.097) where only the variable of active avoidance has been entered into the equation as the predictor variable, and reveals a direct relationship between hardiness and active avoidance. Results also show that 17.3% variance in the criterion variable will be explained by this predictor variable. In the second step where the approach behavior variable was added, F ratio (88.8) was also significant ($p=0.0001$) which shows that both variables can predict the criterion variable (hardiness) and also that 23.8% of variance in the criterion variable is explained by these two predictor variables (active avoidance and approach behavior).

Increase the determination coefficient in the second step (0.238–173=0.65) indicate that variable of approach behavior has caused 0.65% of hardiness scores. To determine the effect of every predictor variables of approach behavior and active avoidance, t and the significance level have been used. According to the obtained t , active avoidance variable ($p=0.009$) and approach behavior variable ($p=0.031$) are significantly involved in predicting variable of hardiness. Now, the rate of this effect can be identified with respect to the Beta.

Beta information shows that the active avoidance variable alone (in the first step) predicts the dependent variable (hardiness) only by 0.415, while in the second step, where the approach behavior variable is added, their contribution in predicting the dependent variable (hardiness) is 0.330 for active avoidance and 0.269 for approach behavior among which the active avoidance variable can predict hardiness more than the approach behavior variable. Overall, there is more relationship between hardiness and behavioral activation system when

its both components (active avoidance and approach behavior) simultaneously enter into the equation rather than when only one component (active avoidance) is examined. Thus, the third hypothesis (there is a relationship between brain/behavioral systems and hardiness of successful people) was verified only for the behavioral activation system (active avoidance and approach behavior) as well as one of the components of the behavioral inhibition system (passive avoidance). However, among these three variables, only the component of active avoidance and approach behavior could predict the criterion variable (hardiness). This is while no significant relationship was found between other components of brain/ behavioral systems (fight/flight and extinction system) and hardiness (0.61, -0.64 and 0.34, respectively).

Discussion

Results obtained in this study (the first hypothesis) showed that those with higher educational levels and subsequently higher academic achievement had greater hardiness than ordinary people with no considerable academic achievement, because as Kobasa et al. suggested, hard people have specifications such as remarkable curiosity, desire to have significant experiences, believe in being effective, expectation to change, assertiveness and ability to have stability and strength and these features can be a reason for their success and progress in life [22].

In general, psychological hardiness is a fundamental feeling of control that allows the hard individual to draw and have access to a list of coping strategies and develops an optimistic view towards the stressors. In other words, the trait of challenge enables the hard person to regard even the unpleasant events as an opportunity for learning, not as a threat to safety. All these aspects prevent or shorten the duration of negative consequences of stressful events [4].

Table 1. Results of the independent t -test between hardiness and components of brain - behavioral systems

Variables	Mean scores of successful people	Mean scores of ordinary people	p -Value
Hardiness	58.77	42.58	0.0001
Approach behavior	23.37	15.83	0.0001
Active avoidance	27.57	25.22	0.002
Passive avoidance	11.95	14.90	0.0001
Extinction	16.78	14	0.001
Fight	11.78	13.40	0.029
Flight	16.55	20.60	0.0001

Table 2. Correlation matrix of variables

Variables	Approach behavior	Active avoidance	Passive avoidance	Extinction	Fight	Flight	Hardiness
Approach behavior	1	0/316*	-0/124	-0/007	-0/040	-0/128	0/373**
Active avoidance		1	-0/289*	-0/220	-0/387**	0/093	0/415**
Passive avoidance			1	0/339**	0/293*	0/185	-0/319*
Extinction				1	0/372**	0/049	-0/19
Fight					1	0/320*	-0/055
Flight						1	0/037
Hardiness							1

* $p<0.05$, ** $p<0.01$

The results of another study on hardiness of successful athletes showed that international successful players enjoy a great hardiness [21]. In addition, the results of a study by Sheard in England also showed that: A. Hardiness is significantly correlated with the academic achievement criteria; B. The students with high hardiness are more conscientious and serious in their academic activities; C. Hard students will be well adapted to the stressful conditions of early years of university as they control them and achieve high academic success and progress [23].

As mentioned before, there are several explanations on the characteristic of hardiness among which the psychobiological explanation is particularly important. One of the theories presented in this field is Gray's personality theory which has provided a new vision of individual differences in the area of brain function and has three brain/behavioral systems (fight/flight, behavioral inhibition and behavioral activation). The results of this study show that the activity level of behavioral activation system in successful people is significantly higher than that in ordinary people and also the activity level of behavioral inhibition system and fight/flight system in successful people is significantly lower than that in ordinary people.

Generally, people with high sensitivity in behavioral activation system show more positive emotions than others and search for opportunities with probability of positive events [12]; hard people are those who look for positive experiences and enjoy more positive and less negative attitudes when confronting problems and difficulties. The results of the studies by Kobasa et al. have also showed that hard people begin to interpret positive events and do not consider the stressful events as threatening and disastrous, but evaluate them as positive and controllable [17]. Now, the presence of these above mentioned features can be assumed in those people with high sensitivity in behavioral activation system and low sensitivity in behavioral inhibition system. On the other hand, as mentioned before, the implicit pattern in the behavioral activation system drives the individual to confrontation and effort to overcome barriers and search for the desirable goals [13]. Thus, according to the results of this study, successful people (who have high hardiness) have more significant sensitivity in behavioral activation system and less sensitivity in behavioral inhibition system than ordinary people and this can suggest that one leading factor towards success is the behavioral activation system. Therefore, a high level sensitivity

and activity of behavioral activation system can be predicted in successful individuals. Meanwhile, the results of the study of Waugh et al showed that there is a direct relationship between high hardiness and high optimism, openness to experience (welcoming new experiences), behavioral activation sensitivity and positive feelings in the past two weeks. While, low hardiness is related to the behavioral inhibition, neuroticism and negative emotions [24].

Results of regression analysis in this study (the third hypothesis) showed that the components of approach behavior and active avoidance (behavioral activation system) can be predicted in successful people, but these two studied components are considered only as one of the predictors of success in people and there are still many other factors involved.

Thus, in order to achieve success, in addition to the external possibilities and conditions, many individual variables such as hardiness trait and presence of the behavioral activation system are undoubtedly involved so a mere study of these two variables is perhaps one of the shortcomings of this research. Therefore, it is suggested that other variables and dimensions of success achievement in different types of successful groups of community to be addressed in future research.

Overall, the results of this research implicitly lead not only to the identification and determination of new factors of success achievement, but also to the possibility of selecting and performing the effective psychological interventions in order to enhance the level of people's effort to fulfill their goals and achieve success, considering the understanding of individual differences due to the sensitivity of different neural structures.

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Authors' Contributions

All authors had equal role in design, work, statistical analysis and manuscript writing.

Conflict of Interest

The authors declare no conflict of interest.

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