Kermanshah University of Medical Sciences

Journal of Kermanshah University of Medical Science

Journal homepage: Htpp://journals.kums.ac.ir/ojs/index.php/jkums

Original Article

The relationship of the Severe Personality disorders with behavioral activation and inhibition systems in patients with paranoid, borderline and schizotypal personality disorders

Setareh Jani[1]*, Mehri Molaee[2]

1. Dept. of Counseling, University of Tabriz, Tabriz, Iran.
2. Dept. of psychology, University of Mohaghegh Ardabili, Ardabili, Iran.

Article Info

Keywords: Personality disorder, Schizotypal disorder, Paranoid disorder, BAS- BIS, Bo

***Corresponding Author**: Parsabad, Pezeshkam Street, Shafa building, Shafag counseling centre. Tel: +989142933690

Email: jani_s11@yahoo.com

Received: 07 May, 2016
Accepted: 21 September, 2016

J Kermanshah Univ Med Sci. 2016; 20(3): 106-110

Abstract

Introduction: Given the disruptive effects of personality disorders on personal and family life, it is essential to recognize their predisposing factors to understand them more accurately, and identify their preventive measures treatment facilitators. Therefore, the present study aimed to examine the relationship of severe personality disorders with behavioral activation and inhibition systems in patients with paranoid, borderline and schizotypal personality disorders.

Methods: The present descriptive-correlational study recruited patients with paranoid, borderline and schizotypal personality disorders presenting to psychiatry clinics in Ardabil using convenient sampling method. A total of 30 paranoid patients, 30 borderline patients and 20 schizotypal patients were selected by a psychiatrist through psychiatric examination, clinical interview and completing Millon Clinical Multiaxial Inventory (MCMI-III). The following instruments were used: MCMI- III and behavioral activation-inhibition system scale (BIS-BAS). The data were analyzed with Pearson's correlation coefficient and stepwise regression.

Results: BIS and BAS systems were both significant for predicting borderline and paranoid personality disorders, but only BIS was significant for predicting schizotypal personality disorder.

Conclusion: These findings can help experts to have a better and more accurate understanding of personality disorders and use proper methods to predict the probability of these disorders and develop treatments.

Introduction

There are major revisions in the field of pathology and personality disorder definitions in Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5). According to this approach, personality disorders are described as core deficits in personality function and dimensional abnormal personality traits. In such a framework, personality disorder diagnosis first requires the presence of at least moderate or greater impairment in personality functioning (Criterion A); and second, it needs abnormal features to be raised/aroused (Criterion B). Criterion B contains abnormal personality domains which include five secondary traits: negative affectivity, detachment, antagonism, disinhibition, psychotism (1).

Severe personality disorders include borderline (BPD), paranoid (PPD) and schizotypal personality disorders (SPD).

BPD is characterized by unstable relationships with other people, unstable sense of self, and unstable emotions. Ten percent of psychiatric outpatients and 30 to 60 percent of patients with other personality disorders suffer from BPD. Stress-related paranoid ideation or dissociative experiences have been reported in 30 to 75 percent of such patients. Suicide attempts and deliberate self-harm characterize BPD (2). Behavioral dysregulation, misinterpretation of emotional signals, and inability to modulate responses are the core aspects of BPD that are related to the inadequate emotional development and cause overreaction and underreaction (3).

SPD is also based on DSM-5 Disorder, including a pervasive pattern of social and interpersonal deficits, characterized by preoccupations and odd beliefs, as well as cognitive or perceptual distortion, and beginning by early adulthood. People with SPD have odd, eccentric, or peculiar thoughts and behaviors, and very poor interpersonal relationships. These people usually consider everything associated with themselves, even completely unrelated events, and think they have extra-sensory abilities.

PPD is a common disorder that occurs in 2.3%-4% of the people. People with PPD suffer from an unrelenting mistrust and suspicion of others. They misinterpret others innocent comments as scary and stressful, and their intentions as being malicious. People

with PPD look for a hidden "threat" in any event and their lack of confidence in others is pervasive and irreversible. People with paranoid personality disorder are mostly interpret others' behavior as malicious, devilish and threatening thing. They are hyper vigilant and rapidly response to perceived threat. They consider people as jealous, and provide unreasonable proofs for their statements (4).

According to the adverse effects of the disorder on the personal and family life of the patients, identifying risk factors and the use of effective therapies appears necessary. Despite extensive studies on the etiology of these disorders, there still are ambiguities and questions about their risk factors and symptoms. More attention to these disorders and extensive efforts to identify the risk factors will lead to a more accurate understanding of preventive and helpful factors in their treatment. In this regard, Gray's biopsychological theory of personality is a new theory in the field of psychopathology that tries to explain the causes of disorders with a biological perspective. Gray's reinforcement sensitivity theory (RST) introduces two primary motivational systems: Behavioral Inhibition System (BIS) and Behavioral Activation System (BAS). These two character traits provide individual differences in sensitivity of two neurological systems in their responses to relevant environmental cues. BIS is thought to be related to direct responses to threats and new stimuli, while BAS is thought to modulate behavior in response to sensitivity to reward and motivations (5). In fact, brain-behavioral systems are new methods of examining the character state of an individual based on physiological and neural underlying processes of the central nervous system. A brain-behavioral system is defined as the status of an individual's sensitivity to reward, punishment, and motivation, which in fact is an interpretation of individuals' personality traits based on their genetic, physiological and neuropsychological characteristics (6). Motoi et al. (7) consider BIS and BAS strongly related to unpleasant and pleasant responses, respectively.

In recent years many empirical supports have been provided in the field of brain-behavioral system's relations with the treatment of mental disorders. Taylor et al. (8) found that disinhibitory trait profile (low BIS and high BAS) was highly associated with BPD and at the same time there was a positive relationship between BPD and BIS (high BIS and low BAS). Pastor et al. also characterized borderline personality disorder by high BIS sensitivity, in addition to high BAS sensitivity. PPD and SPD also showed a combination of BIS and BAS activities, as both were positively associated with BIS and BAS (9). The results of Claes et al. (10) were more or less different, in a way that consistent with previous studies, BPD was positively associated with BIS and BAS, and PPD had also a positive relationship with BIS; but unlike previous studies, PPD had no significant relationship with BAS, and SPD had no significant relationship with brain-behavioral systems (BAS and BIS), either. In other studies conducted in line with the above studies, Tull et al. (11) showed a positive relationship between BIS and emotion regulation difficulties. Kimbrel et al. (12) also implied a relationship and interaction of BIS and BAS in patients with SPD and PPD and high levels of these two brain-behavioral systems in these disorders. Ross et al. (13) also investigated the relationship of BIS and BAS brain-behavioral systems with Cluster B and C personality disorders and showed that Cluster B and Cluster C personality disorders were characterized by high levels of BAS and BIS, respectively. Soler et al. (2014) (14) showed that both BIS and BAS had high activity levels in people with BPD. In addition, the reward and punishment systems predicted about 80% of borderline personality. In Iran, Hashemi and Abdollahzadeh (15) showed that the BIS and BAS scores of patients with BPD were higher than normal people. Narimani et. al (16) also showed that BIS in students with a paranoid personality was higher than students with obsessive-compulsive personality and healthy students. Whereas, BAS scores in students with obsessive-compulsive personality was higher than students with paranoid personality and healthy students.

Studies to identify personality disorders more accurately and to find treatment solutions have special significance due to the facts that personality disorders are prevalent and chronic disorders that affect about half of patients with psychiatric disorders (17); that personality disorder distress and problems trouble the person during life; and that a variety of such disorders, regardless of severity, affect all aspects of a person's life. Therefore, with respect to the above-mentioned statements, and also due to the limited scope of studies on this subject which sometimes had contradicting results, the present study was conducted to assess the role of brain-behavioral activation and inhibition systems in predation of severe personality disorders (schizotypal, borderline and paranoid).

Materials and Methods

This was a descriptive-correlational study. The population consisted of patients with BPD, PPD and SPD referred to psychiatrists. First, arrangements were made with two psychiatrists and the patients diagnosed with BPD, PPD and SPD from April 2014 to February 2015 were selected through convenience sampling. Then the purpose of the study was explained to them, their consent was obtained, and they were assured about the anonymity of the results. Afterwards, clinical psychologist interviews and the Millon Clinical Multiaxial Inventory-III (MCMI-III) were utilized. Finally, among those diagnosed with personality disorders by a psychiatrist and a clinical interview, and also with a cutoff score above 85 in MCMI-III scale (reformatory score above 85 indicates definite diagnosis), 30 patients with BPD, 30 patients with PPD and 20 patients with SPD were selected. They completed the study tool. The inclusion criteria were age between 15-50, educational level of at least finished primary school, psychiatrist diagnosis, and a cutoff score on MCMI-III scale. Exclusion criteria were symptoms of psychosis, mania, severe physical problems, backwardness and also being at early stages of diagnosis so that to eliminate the possibility of drug effects on the

disease process and responses.

The Millon Clinical Multiaxial Inventory-III (MCMI-III) was used to assess severe personality disorders. The inventory was made by Millon (1987) based on his biopsychosocial theory. Its current version was made by Millon (1994) containing 175 self-report questions and 22 scales measuring Clinical Personality Patterns scales, Severe Personality Scales, and Clinical Syndromes scales. Millon (1996) described the validity of the inventory as 0.78. The general power of prediction of the inventory was reported as 0.88-0.99. The reliability of the scales in the standardization study of the MCMI-III (5–14 days later) ranged from 0.82 (Debasement) to 0.96 (Somatoform) with a median of 0.91 for all scales. Scores of above 84 mean that the patient has all of the features that define the disorder (18).

The BIS/BAS scales were used to assess the brain-behavioral systems. The scales are developed by Carver and White and contain 24 items. The BAS scale contains reward responsiveness (RR), drive (Dr) and fun seeking (FS) subscales. Carver and White (1994) reported the internal consistency of the BIS scale as 0.74, and the internal consistency of the BAS subscales as 0.73, 0.76 and 0.66. Each item was rated on a 4-point Likert scale. Abdullahi Majarshin et al. (2006) reported the internal consistency of BIS scale as 0.78 and the internal consistency of reward responsiveness, drive, and fun seeking subscales of BAS scale as 0.82, 0.75, and 0.86, respectively (19). Data was analyzed by descriptive statistics (mean, standard deviation, and frequency) and inferential statistics including Pearson correlation and stepwise regression using the SPSS-19 software (Version 19, SPSS Inc., Chicago, IL).

Findings

Table 1 shows the mean and standard deviation of the subjects in the variables of BIS and BAS brain-behavioral systems and severe personality disorders (BPD, PPD and SPD).

Table 1. The mean and standard deviation of brain-behavioral systems and severe personality disorders

Variables	Mean	Standard deviation	Frequency
BIS	20.44	3.15	300
BAS	41.47	4.56	300
Paranoid	41.89	18.47	300
Borderline	42.95	17.76	300
Schizotypal	39.23	19.84	300

Pearson correlation coefficient was used to determine the correlation between predictor variables (BIS and BAS) and the criterion (BPD, PPD and SPD). The results are presented in Table 2.

Table 2. The correlation matrix of brain-behavioral systems and severe personality disorders

Variables	(1).	(2).	(3).	(4).	(5).
(1) BIS	1				
(2) BAS	0.23**	1			
(3) Paranoid	0.25 **	0.21 **	1		
(4) Borderline	0.36 **	0.28 **	0.47 **	1	
(5) Schizotypal	0.26 **	0.16 **	0.59 **	0.57 **	1

* P<0.05 ** P<0.01

Table 3. A summary of the regression model and statistical characteristics of brain-behavioral systems Severe personality disorders (paranoid, borderline, schizotypal)

Steps	Predictor variables	B	SEB	Beta	t
	Constant value	-11.38	10.44	0.0	-1.09
Step 1	BIS	1.27	0.33	0.21	3.79 ...
Step 2	BAS	0.65	0.23	0.16	2.83**
	The criterion variable: Paranoid personality pattern				
	Explanation: In the first step: R^2=0.065 and (F=20.64); in the second step R^2=0.090 and (F=14.59)				
	Constant value	-27.64	9.55	-	-2.89**
Step 1	BIS	1.80	0.30	0.32	5.88***
Step 2	BAS	0.81	0.21	0.20	3.84***
	The criterion variable: Borderline personality pattern				
	Explanation: In the first step: R^2=0.137 and (F=46.71); in the second step R^2=0.172 and (F=31.82)				
	Constant value	4.88	7.29	-	0.66
Step 1	BIS	1.68	0.35	0.26	4.76***
	The criterion variable: Schizotypal personality pattern				
	Explanation: In the first step: R^2=0.071 and (F=22.70)				

* P<0.05 ** P<0.01 ***P<0.001

As Table 2 shows, there was a significant positive correlation between BIS and BAS and the personality disorders (BPD, PPD and SPD) (P<0.01).

The stepwise regression was used to evaluate the ability of brain-behavioral systems in anticipation of severe personality disorders. The results are presented in Table 3.

Among the brain-behavioral systems, BIS entered the equation in the first step and BAS in the second step to explain PPD. BAS was significant at P<0.001 and BIS was significant at P<0.01. In the following, among the brain-behavioral systems, BIS entered equation in the first step and BAS in the second step to explain BPD, both of which were significant at P<0.001. Finally, among the brain-behavioral systems, BIS entered the equation in the first step to explain schizotypal personality disorder, which was significant at P<0.001.

Discussion

The present study was conducted to predict severe personality disorders based on BIS and BAS brain-behavioral systems. The correlation coefficient results showed that there was a positive relationship between brain-behavioral systems and BPD, PPD and SPD. Regression analysis also showed that BPD prediction based on both BIS and BAS brain-behavioral systems was significant. This was consistent with the findings of previous studies (8, 9, 10, 14, 15), which indicated a positive relationship between BPD and both BIS and BAS. Also, this result was consistent with Ross et al. (13) and Harmon-Jones (20) regarding the relationship between these disorders with high levels of BAS. The findings were consistent with Fowels (21), Pukrop (22), and Kobeleva et al. (23) regarding the relationship of PD with high activity of BIS. At the same time, the findings contradicted Kobeleva et al. (23) that showed a low score of BAS in patients with BPD.

Tendency to externalization, and self-blaming are common and expected among these patients (9). According to Cloninger studies, BPD patients have poor character development including self-directiveness (irresponsible, blaming) and low co-operativeness (hostile, intolerant). They have an unstable character due to high vulnerability (anxious, shyness) and high novelty seeking (impulsive, quick reactions) and low reward dependence (cold, isolated). As a result, these people usually experience dysthymia with a mixture of anxiety and anger and modulate social problems and intense emotions with immature manner (24). The high sensitivity of BIS in people with borderline personality disorder is explained with traits such as being frantic about abandonment and having chronic feelings of emptiness that are the diagnostic criteria for BPD (21). The high activity of the system in such people demonstrates impulsivity, tendency to act before thinking, and inappropriate emotional expressions. The high sensitivity of BIS also revealed an inner suffering of these people and their sensitivity to rejection, anxiety, and stress (10). The high rate of suicide attempt and self-harm in these people could be due to their inner anxiety and tension (25). Kobeleva et al. (23) also believed that a low score of BAS might be due to maladaptive cognitive schemas, high negative affect, insecure attachment style and a negative evaluation bias.

Hashemi and Abdollahzadeh (15) also concluded that experiencing negative emotions and anxiety in BPD causing increased BIS and impulsivity experience (which is part of borderline personality) led to high levels of BAS.

Another part of their findings showed that BPD was significantly predicted by both BIS and BAS brain-behavioral systems. The findings of this study were consistent with Pastor et al. (9) and Kimbrel et al. (12). In line with that, Claes et al. (10) and Narimani et al. (16) also showed that PPD was positively associated with BIS.

Finally, the results of the regression analysis suggested that SPD was only significantly predicted by BIS. This was in line with Pastor et al. (9) and Kimbrel et al. (12) that showed the relationship between SPD and both BIS and BAS. However, this was not in line with Claes (10) which showed no relationship the SPD with either BIS or BAS.

Since only BIS explains SPD, it is consistent with this explanation that this disorder is characterized by a pervasive pattern of social and interpersonal deficits marked by acute discomfort and a reduced capacity for close relationships as well as by cognitive or perceptual distortions and eccentricities of behavior. It was also found that BAS and BIS can predict PPD. It is explained by the fact that People with PPD look for a hidden threat in any event (27) and their lack of confidence in others is pervasive and irreversible. PPD patients avoid intimate relationships, suddenly get angry with others and become aggressive to them (28).These properties can approve our hypothesis about the successful prediction of the disorder by both BAS and BIS. Another explanation for the success of BIS in the prediction of PPD and SPD is that according to Aluja et al. (29) these disorders are characterized by high emotional disturbances which are positively related to neuroticism and negatively with extraversion. Using the results and also due to the fundamental and pervasive problems created by personality disorders, identifying underlying biologic factors of these disorders is important and effective in the preparation of necessary measures for the treatment of patients with these disorders. The present study had some limitations whose removal in future studies might lead to more comprehensive results. Some of the limitations were as follows. The role of gender, educational level and marital status of the participants were not considered whose effects can be examined individually in future studies. It is also recommended that further studies be conducted on bigger clinical samples.

Conclusion

The whole purpose of this study was to predict severe personality disorders based on BIS and BAS, the results of which showed that there was a positive relationship between brain-behavioral systems and paranoid, borderline and schizotypal personality disorders. Both BIS and BAS were significant in predicting BPD and SPD, while only BIS was significant in predicting SPD. Therefore, the brain-behavioral systems are generally significant in predicting severe personality disorders.

Acknowledgments

The authors thank and appreciate the efforts of all the respected colleagues and people who cooperated in completing this study.

References

1. Markon KE, Quilty LC, Bagby RM, Krueger RF. The development and psychometric properties of an informant-report form of the PID-5. Assessment 2013; 20(3):370-83.
2. Rahmani F, Kiani MA, Rezaie F, Nasuri M. [An experimental investigation of emotional reactivity in aversive situations, and delayed emotional recovery, in patients with borderline personality disorder (Persian)]. Behav Brain Sci. 2013;7(2): 91-100.

3. Judd PH, McGlashan TH. A developmental model of borderline personality disorder: Understanding variations in course and outcome. Washington DC: American Psychiatric Publishing, 2010;210-30.
4. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5nd edition. APA publishing. Washington, DC 2013; 301-25.
5. Hecht D. The neural basis of optimism and pessimism. Exp Neurobiol. 2013; 22(3): 173-99.
6. Pickering A, Corr P. JA Gray's Reinforcement Sensivity theory (RST) of personality. In The Sage Handbook of Personality theory and assessment. Thousand Oaks, CA, USA: Sage Publication. 2008; 239- 56.
7. Motoi M, Egashira Y, Nishimura T, Choi D, Matsumoto R, Watanuki S. Time window for cognitive activity involved in emotional processing. J Physiol Anthropol. 2014; 33(1): 21-26.
8. Taylor J, Reeves M, James L, Bobadilla L. Disinhibitory trait profile and its relation to Cluster B personality disorder features and substance use problems. European Journal of Personality. 2006; 20(4):271-355.
9. Pastor MC, Ross SR, Segarra P, Montanés S, Molto' J. Behavioral inhibition and activation dimensions: Relationship to MMPI-2 indices of personality disorder. Personality and Individual Differences. 2007; 42(2): 235-80.
10. Claes L, Vertommen S, Smits D, Bijttebier P. Emotional reactivity and self-regulation in relation in to personality disorders. Personality and Individual Differences. 2009; 47(8): 948-53.
11. Tull MT, Gratz KL, Latzman Kimbrel NA, Lejuez CW. Reinforcement Sensitivity Theory and emotion regulation difficulties: A multimodal investigation. Pers Indiv Differ 2010; 49: 989-99.
12. Kimbrel NA, Mitchell JT, Hundt NE, Robertson CD, Nelson-Gray RO. BIS and BAS interact with perceived parental affectionless control to predict personality disorder symptomatology. J Pers Disord 2012 ; 26(2): 203-12.
13. Ross SR, Keiser HN, Strong JV, Webb CM. Reinforcement sensitivity theory and symptoms of personality disorder: Specificity of the BIS in Cluster C and BAS in Cluster B. Pers Indiv Differ 2013; 54(2): 289-93.
14. Soler J, Vega D, Elices M, Pascual JC. Testing the reinforcement sensitivity theory in borderline personality disorder compared with major depression and healthy controls. Pers Indiv Differ 2014; 61-62 :43-46.
15. Hashemi T, Abdollahzadeh-jeddi A. [Behavioral activation and behavioral inhibition system in borderline Personality (Persian)]. J Res Behav Sci 2013; 11(3): 157-65.
16. Narimani M, Vahidi Z, Abolqasemi A. [Comparison Alexithymia, Impulsivity and Activation and Inhibition of the Students with Symptoms of Obsessive-Compulsive and Paranoid Personality Disorder with Normal Individuals (Persian)]. J Clin Psychol 2013; 5(2):55-65.
17. Sadock BJ, Sadock VA. Comprehensive text book of psychiatry 9th ed. New York: Williams &. Wiklins, 2007; 600-7
18. Fathi Ashtiani A. [psychological tests: Assessment of personality and mental health(Persian)]. 1st ed. Tehran Beasat, 2009;193-227 .
19. Saburi H. [Effection of motivational manipulation and brain/behavioral systems in nerve conduction velocity (Persian)]. PhD thesis in cognitive Neuroscience. Tabriz: Faculty of Education science and psychology. Tabriz university. 2008;75-85.
20. Harmon-Jones E. Anger and the behavioral approach system. Pers Indiv Differ 2003; 35(5):995-1005.
21. Fowels DC. The three arousal model :Implications of gray,s two-factor learning theory for heart rate, electro dermal activity and psychopathy. Psychophysiol 1980; 17: 87-104.
22. Pukrop R. Dimensional personality profiles of borderline personality disorder in comparison with other personality disorders and healthy controls. J Personal Disord 2002; 16:135-82.
23. Kobeleva X, Seidel E, Kohler C, Schneider F, Habel U, Derntl B. Dissociation of explicit and implicit measures of the behavioral inhibition and activation system in borderline personality disorder. Psychiatry Res 2014; 218(1-2): 134-42.
24. Zeigler-Hill V, Abraham J. Borderline personality features: instability of self-esteem and affect. J Soc Clin Psychol 2006; 25(6): 668-778.
25. Korner A, Gerull F, Stevenson J, Meares R. Harm avoidance, self-harm, psychic pain, and the borderline personality: life in a "haunted house". Compr Psychiatry 2007; 48(3): 303-8.
26. McGurk SR, Mueser KT, Mischel Adams R,. Harvey PD, McClure M, Look A, Leung W, Siever LJ. Vocational functioning in schizotypal and paranoid personality disorders. Psychiat Res 2013; 2(15): 498-504.
27. Kesting M, Bredenpohl M, Klenke J, Westermann S, Lincoln TM. The impact of social stress on self-esteem and paranoid ideation. J Behav Ther Exp Psychiatr 2013; 44(1):122-28.
28. Hutton P, Kelly J, Lowens I, Taylor PJ, Tai S. Self-attacking and self-reassurance in persecutory delusions: A comparison of healthy, depressed and paranoid individuals. Psychiat Res 2013; 205(1-2): 127-36.
29. Aluja A, Cuevas L, Garcia LF, Garcia O. Zuckerman`s personality model predicts MCMI-III personality disorders. Pers Indiv Differ 2007; 42: 1311-21.