



Journal of Fundamentals
of Mental Health



Mashhad University
of Medical Sciences



Psychiatry and Behavioral Sciences
Research Center

Original Article

Comparing brain behavioral systems, defense mechanisms, and cognitive-emotional regulation in patients with type I bipolar disorder and normal individuals

SeyyedeH Mona Taghdisi Heydarian

¹M.Sc. in clinical psychology, Psychiatry and Behavioral Sciences Research Center, Mashhad University of Medical Sciences, Mashhad, Iran.

Abstract

Introduction: The present study compared the activity of brain behavioral brain systems, defense mechanisms, and cognitive-emotional regulation in patients with type I bipolar disorder and normal individuals.

Materials and Methods: The statistical population of this causal-comparative research included type I bipolar patients in euthymic phase referred to Ibn-e-Sina Psychiatric Hospital in Mashhad- Iran, in January to October 2020. Thirty patients with type I bipolar disorder and thirty normal individuals were selected by the purposeful sampling method. The research instrument included Brain Behavioral Activation and Inhibition Activity System Questionnaire (BAS/BIS), Defense Styles Questionnaire (DSQ-40), and Cognitive-Emotional Regulation Questionnaire (CERQ-P). The data analyzed through descriptive statistics and multivariate analysis of variance.

Results: The results showed that BAS/BIS, defense mechanisms, and cognitive-emotional regulation are different significantly in bipolar I patients and normal individuals ($P < 0.05$). Bipolar I patients had higher levels of BAS/BIS, immature defense mechanisms, psychosis, boredom with others, rumination, and catastrophe. The level of BAS/BIS, mature defense mechanism, acceptance, positive refocus, and positive refocusing on planning and reassessment was higher in normal individuals than in patients with type I bipolar disorder.

Conclusion: The results showed that type I bipolar disorder is correlated with the components of all three variables of brain activation and brain inhibition systems, defense mechanisms, and cognitive-emotional regulation.

Keywords: Bipolar disorder, Brain behavioral system, Cognitive-emotional regulation, Defense mechanisms

Please cite this paper as:

Taghdisi Heydarian SM. Comparing brain behavioral systems, defense mechanisms, and cognitive-emotional regulation in patients with type I bipolar disorder and normal individuals. *Journal of Fundamentals of Mental Health* 2022 Jul-Aug; 24(4): 281-290.

Introduction

Bipolar disorder is an emotionally reversible, chronic disorder with mania/hypomania and depression. This disorder is associated with periods of clinical recovery or euphoria.

Characteristics of bipolar disorder are mood abnormality, cognitive deficits, and sleep/wake disorders (1). Bipolar type I and type II subtypes have periods of intermittent major depression with mood swings, suicidal ideation, and changes

*Corresponding Author:

Psychiatry and Behavioral Sciences Research Center, Mashhad University of Medical Sciences, Mashhad, Iran.

taghdisihm3@mums.ac.ir

Received: Jun. 17, 2021

Accepted: May. 26, 2022

in appetite, sleep, and energy that often interfere primarily with psychosocial functioning (2). Bipolar disorder is associated with deficits in psychological activity, including the brain behavioral systems, defense mechanisms, and cognitive-emotional regulation (3). Transformational changes have recently been considered as pathology in cognitive control (4). Executive actions refer to cognitive actions and excellent self-regulation of the brain that coordinate actions and behaviors. Some actions include controlling inhibition and activating and organizing behavior (5). Gary studied the brain systems involved in various mental-emotional behaviors and experiences and stated that emotions are regulated through different brain parts. He has called the device involved in positive emotions a tendency device and the device involved in anxiety a behavioral inhibition or stops device. He discusses the reinforcement of three behavioral brain systems: Inhibition Activity System, Brain Behavioral Activation, and Reward Seeking Behavior in Sensitivity Theory. These systems are responsible for resolving the conflict (6). The extent and dominance of these systems vary in people, and effective brain system function in causing bipolar spectrum disorders has been proposed by Depue et al. This model states that patients with bipolar spectrum disorders give abnormal neurobiological and behavioral responses (exaggerated, faster, and more stable) to warning signs of opportunity to earn a reward or lose it. The formulations of this model states that the symptoms of manic and depression are a reflection of over-activity and inactivity of the behavioral activation system, respectively, in the behavioral activating system, and the root of vulnerability to bipolar spectrum disorders lies in a behavioral activation/inhibition system (7,8). Susceptible individuals with bipolar spectrum disorders show species trait sensitivity to BAS-related stimuli (9). Behavioral inhibition systems are positively associated with the severity of depressive symptoms, and behavioral activation systems are associated with manic symptoms (10). The results indicate a difference between behavioral activation/inhibition brain Systems in normal individuals and patients with bipolar disorder. Another reviewed variable in this research is defense mechanisms. Defense

mechanisms are automated regulatory processes that reduce cognitive inconsistencies and minimize sudden internal and external reality changes by influencing how perceptive events are perceived (11). Studies indicate that individuals' physical and psychological health is closely related to the defense mechanisms, and each pathological disorder is associated with specific non-adaptive defense mechanisms (12). Defense mechanisms are responsible for protection against various forms of anxiety and may be normal or abnormal and efficient or inefficient depending on the type of action (13). Studies illustrate that disruption of defense mechanisms can lead to defects in recognizing and expressing emotions (14). Unstable behaviors are observed in people who use basic defense mechanisms. Various studies have shown that elementary and neurotic defense mechanisms are more common in people with symptoms of borderline personality disorder, discrete and unstable behaviors, depression, and bipolar disorder than in ordinary people (15-18). Emotion regulation of thoughts and cognition is inevitably related to human life, and experiencing stressful events helps people to manage their emotions. This coping can shift attention from the long-term goal of self-regulation to reducing emotional turmoil by pursuing pleasure and immediate or impulsive relief from acting (19). Hence, they resort to a wide range of desperate escapes, such as impulsive acts or self-destruction, instead of effective behavior or coping (20). Emotion regulation and cognition strategies are an integral part of human life and enable people to control their emotions and feelings during stress (21). Various studies have shown cognitive-emotional regulation with bipolar disorder (22,23). Therefore, recognizing the psychological characteristics of these people is vital due to the high prevalence of this disorder.

Materials and Methods

The statistical population of this descriptive-comparative causal research consisted bipolar patients type I referred to Ibn-e-Sina Psychiatric Hospital in Mashhad from October to January 2020 and individuals without psychiatric and clinical symptoms. The sample consisted of 30 patients with type I bipolar disorder and 30 normal individuals were selected by purposeful

sampling method. Inclusion criteria for bipolar patients were: aged 20-40 years, conducting clinical interviews with each of the patients with a diagnosis of type I bipolar disorder and examining their mental state, being in the euthymic phase during discharge, and willingness to participate in the study, no intention of committing suicide, sufficient knowledge and motivation to participate and continue treatment. Patients' failure to commit suicide was assessed by examining their previous condition and history.

The normal group were 20-40 years old, they had no psychological or acute physical disorders, not receiving psychiatric and psychological treatment during the last two years based on the checklist records of these people. Exclusion criteria in both groups included comorbidity with another severe psychiatric illness, brain disease such as head trauma and seizures, deafness or severe hearing loss, mental retardation, acute physical illness, and other psychotherapy during the intervention. Exclusion criteria in both groups included having an acute physical illness and unwillingness to continue research and substance abuse.

People explained the goals and how to work before conducting research to observe ethical considerations. While obtaining consent to participate in the study, they were assured that their information would remain confidential.

Research instruments

A) Brain Behavioral Activation and Inhibition Activity System Scale (BAS/BIS): This scale was developed by Carver and White (1993) to evaluate individual differences in the sensitivity of inhibitory and behavioral activation systems (24). This scale has 24 items that respond to the behavioral inhibition system activity (items 2, 8, 13, 16, 19, 22, and 24) by the subscale of punishment sensitivity and the behavioral activating system activity by the three subscales of reward response (items 4, 7, 14, 18, and 23), driver (items 3, 9, 12, and 21), and entertainment search (items 5, 10, 15, and 20). In addition, the scale included four additional items listed as cover items that have no role in assessing behavioral brain systems. Subjects answer these questions on a Likert scale (entirely true= 4, entirely false= 1). Carver and White (1994)

reported the internal stability of the Behavior Inhibition subscale and the behavioral activating subscale as much as 0.74 and 0.71, respectively (24). Mohammadi standardized this scale and reported Cronbach's alpha coefficient as much as 0.74 for the inhibition scale and 0.73, 0.76, and 0.66 for the activation subscales, i.e., reward, drive, and search, respectively (25). Cronbach's alpha coefficient of the questionnaire in Majdi et al.'s research was 0.73 (26). The Cronbach's alpha coefficient of the questionnaire in the present study for the subcomponents of behavioral inhibition and the behavioral activating was as much as 0.74 and 0.76, respectively.

B) The Defense Styles Questionnaire (DSQ-40): This questionnaire was designed by Andrews et al. (1993) with 40 items based on Band et al.'s initial questionnaire (1983). This questionnaire identified 20 defense mechanisms at three immature levels (items 4, 16, 6, 8, 9, 10, 11, 12, 14, 19, 23, 31, 34, 29, 18, 15, 13, 20, 27, 17, 22, 36, 33 and 37), mature (items 2, 3, 5, 28, 26, 35, 25, 38) and psychedelic (items 1, 7, 21, 24, 28, 32, 39, and 40). Immature defense mechanisms include reasoning, projection, denial, omnipotence, devaluation, transition to action, autistic fantasy, bodybuilding, layering, displacement, isolation, and passive aggression. Mature defense mechanisms include exaltation, humor, foresight, and suppression. Psychedelic mechanisms include false alienation, rationalization, reactive organization, and refutation of shaping. The scoring method of this questionnaire is in the form of a 9-point Likert scale (strongly disagree= score 1 to agree strongly= score 9) (27). This questionnaire has been studied and standardized in Iran by Heidari Nasab. The validity of this questionnaire was assessed through the test method and calculation of Cronbach's alpha. The results showed that the highest alpha was observed in 0.81 of male students, and the lowest alpha was observed in 0.69 of female students. The highest and the lowest alpha in defensive styles were related to the immature style as much as 0.72 and 0.50, respectively (28). In this study, Cronbach's alpha was calculated as 0.80.

C) Cognitive Emotion Regulation Questionnaire (CERQ-P): The cognitive-emotional regulation questionnaire was designed by Garnefski and Kraaij (2006) with 36 items. This questionnaire

includes 9 subscales, which are your blame (items 1, 10, 19 and 28), reception (items 2, 11, 20, and 29), ruminant (items 3, 12, 21, and 30), positive refocusing (items 4, 13, 22, and 31), refocus on planning (items 5, 14, 23, and 32), positive re-evaluation (items 6, 15, 24, and 33), comments (items 7, 34, 16, and 25), catastrophic (items 8, 17, 26, and 35) and blame others (items 9, 36, 27, and 18) that each subscale contains 4 items. The scoring method of this questionnaire is in the form of a 5-point Likert scale (rarely= score 1 to almost always= score 5). The total score is calculated by summing the score of the items. Therefore, the score range of each subscale is between 4 and 20. High scores in each subscale indicate the extent to which the strategy is used more in dealing with stressful and negative events (29).

In Garnefski and Kraaij's research, Cronbach's alpha coefficient for the nine subscales has been reported to be between 0.62 and 0.80 (29). Hassani studied this questionnaire in Iran and reported reliability of as much as 0.68 to 0.82 using Cronbach's alpha coefficient (30). In the study, Cronbach's alpha was calculated as 0.79. In the present study, descriptive statistics (mean and standard deviation) and inferential statistics (multivariate analysis of variance) were used to analyze the results.

Results

In this research, 60 participants, including 31 (51.66%) female and 29 (33.48%) male were studied. Table 1 presents the descriptive statistics of the research subjects.

Table 1. The demographic characteristics of the participants

Variable	Group	Frequency	Percentage
Gender	Female	31	51.66
	Male	29	48.33
Age	20-25 year	10	16.16
	26-30 year	20	33.33
	31-35 year	25	41.66
	36-40 year	5	8.33
Education	Diploma	18	30.00
	Associate degree	12	20.00
	Bachelor	20	33.33
	Master	10	16.16

Table 2 shows that the mean scores of behavioral inhibition, developed defense mechanisms, positive refocus, reception, refocus on planning, positive reevaluation, and comments in normal individuals are higher than in individuals with type I bipolar disorder. In addition, the mean scores of

people with bipolar disorder are higher than normal people in behavioral activating (BAS) variables, including underdevelopment defense mechanism, psychotic disturbed defense mechanism, self-blame, rumination, catastrophe, and blame of others.

Table 2. Mean and standard deviation of brain behavioral systems, defense mechanisms, and cognitive-emotional regulation in bipolar patients and normal individuals

Variable	Group	Mean	Standard deviation
Behavioral Inhibition (BIS)	Bipolar	10.93	2.63
	Normal	21.03	4.45
Behavioral Activating (BAS)	Bipolar	47.63	1.93
	Normal	23.16	3.23
Immature defense mechanism	Bipolar	114.80	37.61
	Normal	61.46	14.24
Mature defense mechanism	Bipolar	32.33	9.26
	Normal	60.76	7.29
Psychedelic defense mechanism	Bipolar	61.13	7.68
	Normal	31.80	9.07
Defense mechanisms (total)	Bipolar	208.26	40.78
	Normal	154.03	20.86
Your blame	Bipolar	15.96	1.56
	Normal	7.50	1.38
Reception	Bipolar	7.63	1.49
	Normal	16.06	1.99
Ruminant	Bipolar	16.50	2.14
	Normal	7.66	2.39
Positive re-focus	Bipolar	7.26	1.22
	Normal	16.90	2.48
Refocus on planning	Bipolar	7.36	1.37
	Normal	17.00	2.54
Positive re-evaluation	Bipolar	7.43	1.43
	Normal	18.36	1.24
Comments	Bipolar	6.93	1.59
	Normal	16.93	2.22
Catastrophic	Bipolar	15.00	0.83
	Normal	7.03	1.12
Blame others	Bipolar	15.46	1.54
	Normal	7.10	1.39
Cognitive-emotional regulation (total)	Bipolar	99.56	6.83
	Normal	114.56	5.56

Table 3. Levene's test result for equality of variances in bipolar patients and normal individuals

Variable	f	df1	df2	P
Behavioral Inhibition (BIS)	681.1	3	56	181.0
Behavioral Activating (BAS)	823.2	3	56	055.0
Defense mechanisms	487.0	3	56	693.0
Cognitive-emotional regulation	676.1	3	56	195.0

According to Table 3, the condition of equality of variances using Levene's test is met for behavioral inhibition ($P < 0.181$), behavioral

activating ($P < 0.055$), defense mechanisms ($P < 0.693$), and cognitive-emotional regulation ($P < 0.195$).

Table 4. Results of multivariate analysis of variance (MANOVA) to compare BAS/BIS, defense mechanisms, and cognitive-emotional regulation in bipolar patients and normal individuals

Group	Variable	Total squares	df	Mean Square	F	P	Effect size
Gender	Behavioral Inhibition (BIS)	37.056	1	37.056	3.393	0.071	0.057
	Behavioral Activating (BAS)	0.094	1	0.094	0.013	0.910	0.000
	Immature defense mechanism	332.877	1	332.877	0.402	0.529	0.007
	Mature defense mechanism	115.945	1	115.945	1.690	0.199	0.029
	Psychedelic defense mechanism	80.904	1	80.904	1.128	0.293	0.020
	Your blame	1.342	1	1.342	0.625	0.433	0.011
	Reception	10.349	1	10.349	3.439	0.069	0.058
	Ruminant	0.227	1	0.227	0.043	0.837	0.001
	Positive refocusing	0.454	1	0.454	0.115	0.736	0.002
	Refocus on planning	0.017	1	0.017	0.004	0.950	0.000
	Positive re-evaluation	0.009	1	0.009	0.005	0.945	0.000
	Comments	0.285	1	0.285	0.074	0.787	0.001
	Catastrophic	0.804	1	0.804	0.804	0.374	0.014
	Blame others	0.451	1	0.451	0.201	0.656	0.004
Group	Behavioral Inhibition (BIS)	2003.275	1	2003.275	183.431	0.000	0.766
	Behavioral Activating (BAS)	8944.017	1	8944.017	1225.858	0.000	0.956
	Immature defense mechanism	42134.698	1	42134.698	50.851	0.000	0.476
	Mature defense mechanism	12085.627	1	12085.627	176.174	0.000	0.759
	Psychedelic defense mechanism	12812.152	1	12812.152	178.599	0.000	0.761
	Your blame	1075.136	1	1075.136	500.489	0.000	0.899
	Reception	1054.397	1	1054.397	350.398	0.000	0.862
	Ruminant	1171.748	1	1171.748	219.915	0.000	0.797
	Positive refocusing	1385.571	1	1385.571	350.048	0.000	0.862
	Refocus on planning	1387.629	1	1387.629	320.047	0.000	0.851
	Positive re-evaluation	1788.878	1	1788.878	960.494	0.000	0.945
	Comments	1495.234	1	1495.234	358.073	0.000	8730
	Catastrophic	952.524	1	952.524	952.210	0.000	0.944
	Blame others	1047.007	1	1047.007	466.874	0.000	0.893
Gender*group	Behavioral Inhibition (BIS)	3.845	1	3.845	0.352	0.555	0.006
	Behavioral Activating (BAS)	4.459	1	4.459	0.611	0.438	0.011
	Immature defense mechanism	185.028	1	185.028	0.223	0.638	0.004
	Mature defense mechanism	78.030	1	78.030	1.137	0.291	0.020
	Psychedelic defense mechanism	0.084	1	0.084	0.001	0.973	0.000
	Your blame	4.816	1	4.816	2.242	0.140	0.038
	Reception	1.993	1	1.993	0.662	0.419	0.012
	Ruminant	1.564	1	1.564	0.293	0.590	0.005
	Positive refocusing	0.454	1	0.454	0.115	0.736	0.002
	Refocus on planning	0.151	1	0.151	0.035	0.853	0.001
	Positive re-evaluation	0.027	1	0.027	0.014	.905	0.001
	Comments	0.212	1	0.212	0.114	0.993	0.000
	Catastrophic	0.145	1	0.145	0.145	0.705	0.001
	Blame others	0.130	1	0.130	0.058	0.811	0.021

According to Table 4, there is a significant difference between the two groups in activating brain systems, behavioral inhibition, defense Mechanisms, and cognitive- emotional regulation.

Discussion

This research aimed to investigate the activity of Behavioral Activation/Inhibition Brain (BAS/BIS) Systems, defense mechanisms, and cognitive-emotional regulation in patients with type I bipolar disorder and normal individuals. The results indicated a significant difference between patients with type I bipolar disorder and normal people in Brain Behavioral Activation and Inhibition Activity System, defense mechanisms, and cognitive-emotional regulation. These results were consistent according to which people with type I bipolar disorder differ from normal people in the functioning of Brain Behavioral Activation and Inhibition Activity System (31).

These results align with the studies of Nabizadeh Chianeh et al. to investigate personality traits and behavioral inhibition/activation systems in three groups of patients with schizophrenia, bipolar disorder, and normal people. Data was gathered using the behavioral inhibition/activation systems scale (Carver and White) and Eysenck Personality Questionnaire-Revised. The results suggest that the extreme levels, either high or low, of personality traits of neuroticism (N), extraversion (E) and psychosis (P), and sensitivity of BAS and BIS tend to relate to pathological symptoms. Particularly, BAS and BIS sensitivity relates to a special kind of pathology.

In research by Sabouri Moghaddam, the effect of motivational manipulation on brain processing speed was in people with high BAS sensitivity and people with BIS sensitivity. The results showed that the processing speed of BAS individuals in incentive conditions and the processing speed of BIS individuals in punitive conditions also increased. Arianakia and Hasani used Cognitive Emotion Regulation Questionnaire - Short Form and Impulsivity Bart Questionnaire.

The results showed that the mean scores of patients with Bipolar disorder and major depression in all three dimensions of cognition/attention and impulsivity are more unplanned than the healthy control group, while

there is no significant difference between the two patient groups in these dimensions. In research by Scholten et al., the Behavioral Inhibition System (BIS) and the Behavioral Activation System (BAS) have been conceptualized as two neural motivational systems that regulate sensitivity to punishment (BIS) and reward (BAS). Imbalance in BIS and BAS levels has been reported to be related to various forms of psychopathology. Since sensitivity to stress has been supposed to be a pathway for the development of psychotic symptoms, this study examined BIS and BAS scores in schizophrenia and their relationship with psychopathology and physiology. The results of this research on patients showed higher sensitivity to threat than control subjects. Higher BIS sensitivity correlated with a longer duration of illness and lower negative symptoms.

In line with these studies, people with type I bipolar disorder differ from normal people in functioning behavioral activating/inhibitory brain systems (32-36). Also, in terms of differences in defense mechanisms between people with type I bipolar disorder and normal people, it is consistent with the research of Wang et al., immature defense mechanisms relationship between childhood trauma and onset examined bipolar disorder.

This study investigated the patterns of childhood trauma in patients with bipolar I (BD-I) and bipolar II (BD-II) disorders based on DSM-IV and in contrast to healthy volunteers. They examined whether immature defense mechanisms mediate the relationship between childhood trauma and the onset of bipolar disorder.

These findings demonstrated risk reduction strategies and psychosocial intervention to prevent and treat patients with bipolar disorder. Kramer et al. emphasized that defense mechanisms, as the central concept of psychoanalysis, have evoked different levels of interest in research in psychotherapy and psychopathology. Defensive traits have recently been systematically examined concerning several clinical diagnoses, such as emotional and personality disorders.

Defensive features in BD include a set of 5 immature defenses whose absolute strength is related to signal level. These results are discussed concerning the psychological vulnerability of BD, and the therapeutic implications for

psychodynamic psychotherapy with such patients are challenging.

Bragazzi et al. emphasize that bipolar disorder (BD) is a prevalent mental disorder that, despite attempts to develop psychological and biological theories, is still unknown regarding aggressive styles and defense mechanisms. Successful completion of this study elucidated the relationship between aggressive styles and defense mechanisms in bipolar patients and their parents (37-39). In terms of differences in cognitive-emotional regulation in people with type I bipolar disorder and normal people, this result is consistent with the research of Graber et al., pointed that bipolar disorder involves difficulties with emotion regulation. However, the precise nature of these emotion regulatory difficulties is unclear.

The study examined whether individuals with remitted bipolar I disorder and healthy controls differ in their ability to use one effective and common form of emotion regulation, cognitive reappraisal. Results suggest that reappraisal may be an effective regulation strategy for negative and positive emotions across healthy adults and individuals with bipolar disorder. In research by Rowland et al., Schizophrenia (SZ) and bipolar disorder (BD) show common cognitive deficits that may impair the ability to self-regulate emotion. They examined the use of specific cognitive strategies to regulate negative emotion in SZ and BD and their relationship to mood symptom levels.

The most consistent predictors of semiotics for SZ were self-blame and catastrophe, while for BD, it was positive for rumination and reduced reassessment. These findings indicate an inconsistent use of cognitive strategies for self-regulation of negative emotions in SZ and BD, similar to those previously reported for unipolar depression by Khafif et al. They stated that emotion regulation is a relatively new topic in psychiatry and showed a statistically significant difference in accuracy in emotion regulation tasks, with a tendency for less accuracy in PBD patients. However, both groups were not statistically different in response time (40-42). The behavioral inhibition system reflects the trait of prematurity, and the sensitivity to reward, which is directly related to the behavioral activator, is a sign of prematurity.

According to Gary, these brain-behavioral systems are the basis of individual differences, and their activity leads to the evocation of different emotional reactions. There is sensitivity to conditional reward stimuli and lack of punishment in the behavioral activation system, triggering positive emotions. However, sensitivity to conditional stimuli is punishment and lack of reward in the behavioral inhibition system. People with type I bipolar disorder experience manic and major depression periods, in which manic episodes are more pronounced. Therefore, it can be expected that the behavioral activating brain system operates at a high level in people with type I bipolar disorder (6).

The level of the behavioral activating is controlled in normal individuals because of the individual's ability to control arousal in the face of stressful situations. These people are not as easily affected by conditions as manic people; in other words, they have more behavioral inhibition than people with type I bipolar disorder. Patients with type I bipolar disorder have high levels of behavioral activating and low levels of behavioral inhibition due to manic periods. In normal people, the level of the behavioral activator is controlled due to the individual's ability to control arousal in the face of stressful situations (43).

Given that defenses are derived from emotions, it can be expected that people with bipolar disorder use more uncompromising and psychologically disturbed defense mechanisms due to obvious cognitive and emotional deficits. In comparison to normal people in which the defense mechanisms used are more adapted, people with type I bipolar disorder with a manic-depressive state in the face of stress also deal with emotion-centeredness instead of controlling or solving the problem-based emotion and choose more incompatible mechanisms in the case of failure to reduce the emotional problems caused by it. Normal people use more sophisticated mechanisms in times of stress to reduce anxiety because of the more appropriate emotional control and emotional regulation. Type I bipolar disorder reduces cognitive and emotional capacity in individuals and affects cognitive-emotional regulation.

These people take action due to the high mood in the mania periods that create tensions and injuries for them. Since, these people cannot measure issues properly, they use self-blame, other blame,

ruminant, and catastrophic strategies in the face of the problems, but normal people use more positive strategies in the face of stressful and environmental damage such as reception and positively re-evaluating situations due to their good cognitive capacity and gain control over their emotions and cognition in this way (43). Despite the many practical results deduced from this study, this study has limitations, such as the small number of patients. Considering the diagnosis of type I bipolar disorder, caution should be exercised in the generalizability of the results. One of the limitations of this study is the lack of adequate availability of people with type I bipolar disorder in the euthymic phase; the lack of similar research in the country and even abroad is one of the most important limitations of this study. It is suggested that a wider statistical population be examined and patients with type I bipolar disorder be considered at a broader level. Also, this research should be

conducted in other communities, and the results should be compared.

Conclusion

Considering the bilateral effects and role of bipolar disorder with the behavioral activation/inhibition systems, defense mechanisms, as well as emotional cognitive regulation, therapists are recommended to pay special attention to each behavioral activation/inhibition system, defense mechanisms, as well as emotional cognitive regulation, which can facilitate and apply the treatment.

Acknowledgments

The author of the research would like to thank the participants who have sincerely cooperated in this research project and the staff of Ibn-e-Sina Psychiatric Hospital in Mashhad city. The author declare any conflict of interest or financial support.

References

1. Gordovez FJ, McMahon F. The genetics of bipolar disorder. *Molec Psychiatry* 2020; 25(3): 544-59.
2. Van Rheenen TE, Lewandowski KE, Bauer IE, Kapczinski F, Miskowiak K, Burdick KE, et al. Current understandings of the trajectory and emerging correlates of cognitive impairment in bipolar disorder: An overview of evidence. *Bipolar Disord* 2020; 22(1): 13-27.
3. Rhee TG, Olfson M, Nierenberg A, Wilkinson ST. 20-year trends in the pharmacologic treatment of bipolar disorder by psychiatrists in outpatient care settings. *Am J Psychiatry* 2020; 177(8): 706-15.
4. van den Wildenberg WP, van der Molen MW. Developmental trends in simple and selective inhibition of compatible and incompatible responses. *J Exp Child Psychol* 2004; 87(3): 201-20.
5. Carlson SM. Developmentally sensitive measures of executive function in preschool children. *Dev Neuropsychol* 2005; 28(2): 595-616.
6. Gray JA, McNaughton N. The neuropsychology of anxiety: An enquiry into the functions of these septo-hippocampal system. New York: Oxford University; 2000: 53-98.
7. Depue RA, Krauss SP, Spoont MR. A two-dimensional threshold model of seasonal bipolar affective disorder. In: Magnuson D, Ohman A. (editors). *Psychopathology: An interactional perspective*. San Diego, CA: Academic Press; 1987: 95-123.
8. Altman E, Hedeker D, Peterson, JL, Davis JM. A comparative evaluation of three self-rating scales for acute mania. *Biol Psychiatry* 2001; 50(6): 468-71.
9. Avila C, Parcet MA, Ortet G, Ibanez-Ribes MI. Anxiety and counter-conditioning: the role of the behavioral inhibition system in the ability to associate aversive stimuli with future rewards. *Pers Individ Dif* 1999; 27(6): 1167-79.
10. Alloy LB, Abramson LY, Walshaw PD, Cogswell A, Smith JM, Neeren AM, et al. Behavioral approach system (BAS) sensitivity and bipolar spectrum disorders: A retrospective and concurrent behavioral high-risk design. *Motiv Emot* 2006; 30(2): 143-55.
11. Vaillant GE. Ego mechanisms of defense and personality psychopathology. *J Abnorm Psychol* 1994; 103(1): 44.
12. Offer R, Lavie R, Gothelf D, Apter A. Defense mechanisms, negative emotions and psychopathology in adolescent inpatients. *Compr Psychiatry* 2000; 41(1): 35-41.
13. Quintin J, Cheng SC, van der Meer JW, Netea MG. Innate immune memory: Towards a better understanding of host defense mechanisms. *Curr Opin Immunol* 2014; 29: 1-7.
14. Majumdar S, Peralta-Videa JR, Bandyopadhyay S, Castillo-ichel H, Hernandez-Viezcas JA, Sahi S, et al. Exposure of cerium oxide nanoparticles to kidney bean shows disturbance in the plant defense mechanisms. *J Hazard Mater* 2014; 27(8): 279-87.
15. Nohie S, Hassani J. [Relationship between cognitive emotion regulation strategies and defense mechanisms with symptoms of borderline personality disorder]. *Thought and behavior* 2017; 11: 57-91. (Persian)

16. Ranjbari T, Besharat M, Pourhossein R. [The mediating role of defense mechanisms in the relationship between attachment disorders and symptoms of anxiety and depression]. *Transformational psychology* 2017; 14: 15-27. (Persian)
17. Bradley R, Westen D. The psychodynamics of borderline personality disorder: A view from developmental psychopathology. *Dev Psychopathol* 2005; 17: 927-57.
18. Besharat M. [Comparison of defense mechanisms in patients with depression, anxiety disorders and normal people]. *Clinical psychology and counseling research* 2013; 3(1): 41-54. (Persian)
19. Schreiber LR, Grant JE, Odlaug BL. Emotion regulation and impulsivity in young adults. *J Psychiatr Res* 2012; 46(5): 651-8.
20. Gruber J, Harvey AG, Gross J. When trying is not enough: Emotion regulation and the effort-success gap in bipolar disorder. *Emotion* 2012; 12(5): 997.
21. Ongen DE. Cognitive emotion regulation in the prediction of depression and submissive behavior: Gender and grade level differences in Turkish adolescents. *Procedia Soc Behav Sci* 2010; 9: 1516-23.
22. Xiao Q, Wu Z, Jiao Q, Zhong Y, Zhang Y, Lu G, et al. Children with euthymic bipolar disorder during an emotional go/no go task: Insights into the neural circuits of cognitive-emotional regulation. *J Affect Disord* 2021; 282: 669-76.
23. Cisler JM, Olatunji BO. Emotion regulation and anxiety disorders. *Curr Psychiatry Rep* 2012; 14(3): 182-7.
24. Carver CS, White TL. Behavioral inhibition, behavioral activation, and affective responses to impending reward and punishment: The BIS/BAS Scales. *J Pers Soc Psychol* 1994; 67(2): 319-33.
25. Mohammadi N. [Psychometric properties of inhibition system and behavior activation scales in Shiraz University students]. *Clinical psychology and personality* 2008; 6(1): 62-70. (Persian)
26. Majidi H, Atadokht A, Hazrati S, Subhi Gharamaleki N. [Comparing brain behavioral systems and difficulty in emotional regulation in students with and without clinical symptoms of social anxiety disorder]. *Clinical psychology and personality* 2019; 17(1): 165-74. (Persian)
27. Andrews G, Singh M, Bond M. The Defense Style Questionnaire. *J Nerv Ment Disord* 1993; 18(1): 246-56.
28. Heidari Nasab L, Azad Fallah P, Shairi M. [Validity and reliability of the Questionnaire Defense Styles Questionnaire in Iranian samples]. *Clinical psychology and personality* 2007; 5(1): 11-27. (Persian)
29. Garnefski N, Kraaij V. Relationships between cognitive emotion regulation strategies and depressive symptoms: A comparative study of five specific samples. *Pers Individ Dif* 2006; 40(8): 1659-69.
30. Hassani J. [The psychometric properties of the Cognitive Emotion Regulation Questionnaire (CERQ)]. *Journal of clinical psychology* 2011; 3: 73-84. (Persian)
31. Meyer B, Johnson SL, Carver CS. Exploring behavioral activation and inhibition sensitivities among college students at risk for bipolar spectrum symptomatology. *J Psychopathol Behav Assess* 2001; 21(4): 275-92.
32. Nabizadeh Chianeh Q, Poursharifi H, Farvarshi M. [Personality traits and behavioral inhibition/ activation systems in patients with schizophrenia, bipolar disorder, and normal individuals]. *Clinical psychology* 2010; 2: 51-63. (Persian)
33. Saburi H, Bakhshi A, Gaderi Pakdel F. [The effect of motivational manipulation on brain processing speed in highly sensitive individuals in behavioral inhibitor/activator systems]. *Researches on clinical psychology and consultation* 2009; 10(1): 185-96. (Persian)
34. Arianakia E, Hasani J. [Impulsivity and cognitive emotional regulation strategies in patients with bipolar disorder and its impact]. *News of cognitive sciences* 2014; 11(2): 10-16. (Persian)
35. Bagheri M, Mulazadeh J. [Comparison of brain/ behavioral systems activity in patients with unipolar major depressive disorder, manic bipolar disorder and normal individuals]. *Sadra medical sciences* 2014; 2(3): 257-68. (Persian)
36. Scholten MR, van Honk J, Aleman A, Kahn RS. Behavioral inhibition system (BIS), behavioral activation system (BAS) and schizophrenia: Relationship with psychopathology and physiology. *J Psychiatr Res* 2006; 40(7): 638-45.
37. Wang L, Yin Y, Bian Q, Zhou Y, Huang J, Zhang P, et al. Immature defense mechanisms mediate the relationship between childhood trauma and onset of bipolar disorder. *J Affect Disord* 2021; 278: 672-7
38. Kramer U, Roten Y, Perry JC, Despland JN. Specificities of defense mechanisms in bipolar affective disorder: Relations with symptoms and therapeutic alliance. *J Nerv Ment Dis* 2009; 197(9): 675-81.
39. Bragazzi NL, Pezzoni F, Del Puente G. Investigating aggressive styles and defense mechanisms in bipolar patients and in their parents. *Health Psychol Res* 2014; 2(3): 1546.
40. Gruber J, Hay AC, Gross J. Rethinking emotion: Cognitive reappraisal is an effective positive and negative emotion regulation strategy in bipolar disorder. *Emotion* 2014; 14(2): 388.
41. Rowland JE, Hamilton MK, Lino BJ, Denny K, Hwang EJ, Green MJ, et al. Cognitive regulation of negative affect in schizophrenia and bipolar disorder. *Psychiatry Res* 2013; 208(1): 21-28.
42. Khafif TC, Siqueira Rotenberg L, Nascimento C, Beraldi GH, Lafer B. Emotion regulation in pediatric bipolar disorder: A meta-analysis of published studies. *J Affect Disord* 2021; 285: 86-96.
43. Meyer B, Johnson SL, Winters R. Responsiveness to threat and incentive in bipolar disorder: Relations of the BIS/BAS scales with symptoms. *J Psychopathol Behav Assess* 2001; 23(3): 133-43.