

The Effectiveness of Acceptance and Commitment Therapy in Impulsivity of Patients with Depression

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Abstract

Introduction: Impulsivity is one of the main cores of bipolar disorder and the maintenance factor of depressive symptoms in patients with major depressive disorder. The aim of this study was to assess the effectiveness of the acceptance and commitment therapy in impulsivity of patients with bipolar I disorder and major depression disorder.

Method: The study design was quasi-experimental. The study population included all patients with bipolar I disorder and major depression disorder that have been referred to the public and private treatment centers of Zanjan. Among those, 12 patients with bipolar I disorder and 12 patients with major depression disorder were selected based on psychiatric diagnosis and on the criteria of DSM-IV. Also by Composite International Diagnostic Interview (CIDI) and according to the inclusion criteria and convenient sampling, all patients received 8 sessions of 90 minutes treatment based on acceptance and commitment therapy. All Patients were assessed three times (before treatment, mid-treatment and end of treatment) using the impulsivity questionnaire. Data were analyzed by ANOVA *repeated* measure test.

Results: The results of data analysis indicated the effectiveness of acceptance and commitment therapy in decreasing impulsivity ($F_{(66, 3)} = 115.7$; $p < 0.001$, $\eta^2 = 0.84$) and the components of attention/cognitive impulsivity ($p < 0.001$), motor impulsivity ($p < 0.001$), and non-planning ($p < 0.001$) in both groups of patients with bipolar disorder-I and major depression disorder.

Conclusion: Acceptance and commitment therapy decreases the impulsivity of patients with bipolar disorder and major depression disorder by increasing awareness, psychological acceptance, emotional isolation, management of emotions, reducing ineffective control and use of problem-solving.

Declaration of Interest: None.

Key words: Acceptance and commitment therapy, Impulsivity, Bipolar disorder I, Major depression disorder

Introduction

Bipolar disorder and major depressive disorder are two of the most common mood disorders, with a prevalence of about 1 and 6.7%, respectively [1]. The main feature of major depressive disorder, sometimes referred to as unipolar depression, is intense sadness, withdrawal from others, and a sense of futility and worthless. The main feature of bipolar

disorder is manic episode. Mania is a kind of excitement with main features that include excessive physical activity, rapid and continuous change of opinion, behavior without thinking, and a sense of excessive vitality and joy (euphoria). Mania is often associated with depression and for this reason this group of disorders are called bipolar disorders. Mania

and depression are on opposite ends of mood or effect. They can be regarded as two opposite poles of a continuum: deep sorrow on one side and unlimited joy on the other side [2]. There is high comorbidity between major depression and bipolar disorders, and many outcomes of the disorders are similar in areas of life. One of the important outcomes of these disorders that leads to very large negative effects on the life and performance of people is impulsivity, and its existence in numerous studies of major depressive disorder [3-5] and bipolar disorder [6-9] has been approved.

The results showed that impulsivity plays a role in mood disorders, has been increased in bipolar disorder manic period [10], and impulsivity is the main feature of bipolar disorder [11]. In one study [12], impulsivity average scores in all three dimensions of attention/cognition, motor, and non-planning in patients with bipolar disorder and major depression were higher than normal, while there was no significant difference between the two groups of patients in these dimensions. This finding is consistent with a research that showed that impulsivity in major depression [13] and bipolar patients [7, 14] are higher than the control group. In explaining this relationship, it can be argued that the relationship between impulsivity and bipolar disorder can have many different causes. For example, mood period outcomes are risk factors for the disorder or an independent factor associated with biological causes of the disorder [15]. Research has shown attention/cognitive and non-planning dimensions of impulsivity, may partly reflect executive function defect. The evidence also suggests that disruption of the main executive functions such as working memory, inhibition control and task change are associated with bipolar disorder [16]. In the relative autonomy of impulsivity and mood in bipolar patients, impulsivity dimensions (dimensions explaining attention disorders and lack of future orientation) is often associated with the mood state of depressed patients. So the probability and the outcome of the symptoms is depressive [17]. Impulsivity is considered as one of the main aspects of suicidal attempts and behaviors in major depressive disorder [18].

In another study [19] in which the relationship between emotion regulation and impulsivity in normal population has been investigated, they concluded that the failure of emotion regulation is positively related with measures of self-reported impulsivity, so the more the failure in emotion regulation the more the impulsivity (in attention/cognitive, non-planning subscale of Barratt impulsivity scale).

Impulsivity is a multidimensional concept that has been defined as getting in trouble by hasty behaviors without foresight and responsiveness to stimuli that often brings maladaptive outcomes. Impulsive actions usually entail adverse consequences. Impulsivity is considered a central factor in the occurrence of suicidal behavior, substance abuse, aggression, personality disorders, attention deficit and criminal behaviors [11]. Impulsive individuals operate immediately without considering the impact of their activities. These people have difficulty in controlling their response and prefer immediate rewards to late outcomes. Impulsivity is also associated with information processing style. In addition, impulsive individuals have fast information processing style and difficult impulse response inhibition [20]. Since impulsivity is associated with principle illnesses, family, social and occupational problems, accidents and violence, it is of clinical importance [21]. So increased impulsivity can independently predispose individuals to develop and maintain psychopathology associated and impulsive behaviors [19].

In this regard, various treatments have been used which include interpersonal relation therapy, family therapy, cognitive behavioral therapy and newer treatments such as mindfulness based stress reduction (MBSR), mindfulness based cognitive therapy (MBCT), acceptance and commitment therapy (ACT) etc. [22]. Acceptance and Commitment Therapy is one of the treatment methods that have direct and bi-directional relation with depression effectiveness of acceptance and commitment therapy in the treatment of depressive disorder [23-25] and bipolar disorder [26-29] has been approved.

ACT is one of the third wave treatments [34], in which the processes of mindfulness, acceptance and commitment to change behavior; have been used to create psychological flexibility [35]. A research by Kaviani et al. [30] showed that mindfulness training in patients with mood disorders such as depression and bipolar disorder causes a significant improvement in mental health and depression. In one research [31], the improvement of depression in patients with chronic pain was confirmed by acceptance and commitment therapy. In several studies [28, 29], effectiveness of acceptance and commitment therapy in reducing symptoms of bipolar disorder were confirmed. Another study [33] that was conducted with the aim of mindfulness-based therapy on depression showed that the treatment was effective in reducing depressive symptoms.

Approach offers an integrative mixture of mindfulness skills and has been used in a wide range of empiric training and value-oriented behavioral interventions. This therapeutic approach clearly accepts changing thoughts and feelings rather than changing the content or the frequency. ACT has six central processes that lead to psychological flexibility. The six processes are: acceptance, diffusion, self as context, contact with the present moment, values and committed action.

At first, efforts are made to increase mental acceptance of subjective experience (thoughts, feelings) and decrease ineffective control mutually. The patient is taught that any act to control or avoid these unwanted mental experiences is ineffective or counterproductive and exacerbating them and these experiences (without any internal or external reaction to remove them) must be fully accepted. In the second step, the person's mental awareness is increased in the present moment, i.e the person is informed about all of his or her mental states, thoughts and behaviors in the present moment. In the third stage, the person is taught to separate himself from these mental experiences (cognitive diffusion), so that he or she can act independent of the experiences. Fourth, efforts are made to reduce the excessive focus on the visualized personal story (such as to be victim) the person has in mind for himself. Fifth, the

person is helped to recognize his or her personal values and clearly identify them to make specific behavioral goals (values clarification). Finally, motivating to committed action implies activities towards the specified goals and values with accepting of mental experiences. These subjective experiences can be depressing or obsessive thoughts, events related thoughts (trauma), phobias, etc. [30].

Due to the high prevalence of depression and bipolar disorders, the high recurrence of these disorders poses numerous consequences for patients and their relatives in different vocational, functional, social, educational and other areas. With regard to the role of impulsivity in bipolar and depression disorders bearing in mind that it is from the main cores of bipolar disorder and the factors that cause and perpetuate depressive symptoms in patients with major depressive disorder, the effectiveness of acceptance and commitment therapy in these disorders and other disorders has been approved. Also in previous research, the effect of Acceptance and Commitment therapy on impulsivity has not been addressed which is a main feature of bipolar disorder and major depressive disorder. Therefore this study examines the effectiveness of acceptance and commitment therapy on impulsivity in patients with bipolar and major depression disorders.

Methods

The research was a quasi-experimental study design and clinical trial with two groups of intervention based on acceptance and commitment therapy such that the pre-treatment, mid-treatment and the end of treatment were assessed. Statistical population included all patients with bipolar mood disorder type I and major depression referred to or hospitalized in public and private hospitals in the city of Zanjan. The sample included patients with bipolar I disorder and major depression that referred to Zanjan Mehrgostar Training Center for rehabilitation of chronic psychiatric patients between July to December, 2015. The sample comprised two groups of 14 patients with bipolar I disorder and major depression who were selected by convenience sampling. In group of patients with bipolar disorder type I, two patients due to relocation, distance and

admission did not participate in the sessions and in the group of patients with major depression one did not cooperate and one did not attend the sessions completely; so each group consisted of 12 subjects. In the study, patients with major depression disorder (MDD) and bipolar mood disorder (BMD) were those who had received a diagnosis of MDD and BMD based on the psychiatrist's diagnosis. Inclusion criteria for the study were: 1) Lack of doubt during the past two months for the patients, 2) Lack of substance abuse disorders, 3) Not receiving other psychotherapy interventions simultaneously, 4) Aged between 30 to 50 years. In this study, not participating in the training sessions for any reason was as a criterion for exclusion from the study.

In the study, Composite International Diagnostic Interview (CIDI) and Barrat Impulsivity Questionnaire (BIS-11) [36] were used.

Composite International Diagnostic Interview (CIDI): This interview is a structured, diagnostic, standardized and comprehensive interview for assessment of psychiatric disorders. The survey is developed by the World Health Organization and mental disorders can be recognized by validly, based on the definitions and criteria of DSM-IV and ICD-10. Several studies at the international level have shown good to excellent reliability of CIDI between interviewers and different cultures and different times. Validity of and reliability of Persian version [37, 38] have been studied.

Barratt Impulsiveness Scale (BIS-11): In the present study BIS were used. Eleventh Edition of Barratt Impulsiveness Scale [36] has a good correlation with Eysenck Impulsiveness Scale, and Professor Ernest Barrett built a questionnaire composed of questions from both, that shows aspects of the decision hastily without forethought [37]. This questionnaire has 30 items and the subjects are expected to answer each of them on a scale with four measures (1: never / rarely; 2: sometimes; 3: often 4: Very often / always). Eleven of the 30 items received reverse scores (Questions: 1, 7-10, 12-15, 20, 29 & 30). The lowest and highest scores in the scale are 30 and 120, respectively, and non-psychiatric control group score is

usually between 50 and 60 [38]. The scale measures three factors of cognitive / attention impulsivity (fast cognitive decisions), motor impulsivity (acting without thinking) and the non-planning (lack of foresight or future orientation). To determine the validity and reliability of Barratt Impulsiveness Scale, one study [36] was directed and has reported the validity and reliability as 0.87 and 0.79, respectively, which showed acceptable reliability and validity of the questionnaire. In Iran, for the first time, Ekhtiari et al. [40] addressed standardization of the BIS by translating the original questionnaire and applying on healthy subjects and opiate abusers. Validity and reliability in this study was 0.75 and 0.83, respectively which shows that Persian version of the questionnaire is desirable in terms of validity and reliability. In the first stage, following the identification of the sample based on inclusion criteria of the study, selected individuals were invited to the next stage of research. At this stage, the selected participants were evaluated on an individual basis. The purpose of research and experiment was described by the researcher to the subjects and probable questions were answered. Then subjects, to accomplish pre-test completed the Barratt Impulsiveness Scale (BIS-11). Next, subjects were treated with Acceptance and Commitment Therapy for 8 sessions, and 90 minutes each. The treatment was directed by a clinical psychologist (according to treatment protocol, abbreviated in Table 1). In addition to the pre-test, each patient was assessed two other times (mid-treatment and end of treatment) by the BIS-11. It should be noted that researchers adhered to ethical considerations. One of these ethical considerations takes into account participants' informed consent to participate in research as well as the willingness to discontinue at any time. After gathering the information, data were analyzed by SPSS version 23 software using statistical test for analysis of variance with repeated measure and Bonferroni post hoc test.

Table1. Summary of acceptance and commitment therapy sessions' (ACT) content [35]

sessions	Content
1 st	To familiarize group with each other & to establish a therapeutic relationship; To introduce the research subject; analysis of BMD & MDD in each group, including the time and the work undertaken, psychoeducation, Break; Answer to the questionnaires.
2 nd	To check inside and outside world in the treatment (ACT); and the creation of a willingness to quit the ineffective program and to develop creative hopelessness; Break; Effectiveness as a measure of assessment.
3 rd	To review the experience of previous session, to express the control as problem, performance assessment; Break; To review next week task.
4 th	To review the experience of previous session, behavioral task and commitment, to introduce the defusion, the function of cognitive diffusion techniques; Break; Intervention in language problematic chains performance, to weaken self-waste with thoughts and emotions
5 th	To review the observer behavioral task and commitment, to show the separation between self, experience and behavior; to observe self as context, to weaken conceptual self and self-statement
6 th	Performance assessment; mindfulness techniques function, the contrast between experience and mind; Break; Modeling.

Results

In Table 2, the mean and standard deviation for age and education level of the two groups of

patients with bipolar disorder and patients with major depressive disorder is provided.

Table 2. Subjects' age and education means and standard deviation

variable	group	number	mean	standard deviation
Age	BMD patients	12	35.42	5.11
	MDD patients	12	43.42	6.46
Education level	BMD patients	12	10.03	2.38
	MDD patients	12	11.08	3.05

In Table 3, the mean and standard deviation components of impulsivity in three stages: before the intervention (pre-test), during the intervention (mid-treatment) and after the intervention (post-

test) for the two groups of patients with bipolar disorder and patients with major depressive disorder is provided.

Table 3. Impulsiveness components means and standard deviations in two groups at different steps

Variable	group	Before intervention		mid intervention		After intervention	
		mean	Standard deviation	mean	Standard deviation	mean	Standard deviation
Cognitive/attention impulsiveness	BMD	26.33	2.71	27.67	3.60	21.58	2.90
	MDD	24.58	3.80	26.25	3.96	22.42	2.99
Motor impulsiveness	BMD	33.00	3.88	34.67	5.66	25.17	3.81
	MDD	31.83	6.51	30.42	6.65	23.17	3.41
Non-planning impulsiveness	BMD	36.33	4.29	39.00	6.41	30.83	4.98
	MDD	38.50	4.08	38.50	5.18	31.42	5.26

From Table 3, the average impulsivity subscales cognitive / attention, motor and non-planning impulsivity in the middle intervention compared to pre-test slightly increased, but after the intervention than before the intervention it decreased. These results will be discussed in more detail in subsequent analyses. To investigate the difference between the two groups of patients with bipolar disorder and patients with major depressive disorder and investigate the effect of ACT on the components of impulsivity (cognitive / attention, motor and non-planning) in stages of before, middle and post intervention, mixed ANOVA test $2 \times (3 \times 3)$ and Bonferroni post hoc tests were used. In this analysis the two groups (BMD patients and MDD patients) were considered as the between subjects factor. Three measurement modes (before, during and after the intervention) were considered as

within-subjects factor to separate the three components of impulsivity (cognitive / attention, motor and non-planning) in the analysis. Before performing $2 \times (3 \times 3)$ mixed analysis of variance, outliers were examined and excluded. Also, assumption of homogeneity of variance was evaluated through Mauchly's Test of sphericity. In this study, according to Levine test ($F(1,22) = 0.26-1.42$; $p > 0.01$) and no significance, the assumption of homogeneity has been respected. In case of a significant Mauchly's Test of sphericity, if $\epsilon \geq 0.7$, the Huynh-Feldt Epsilon was used and if $\epsilon \leq 0.7$ the Greenhouse Geisser Epsilon for F correction were used. In Table 4, $2 \times (3 \times 3)$ mixed analysis of variance results for investigating between groups possible differences in impulsivity components and modes of intervention and interaction between the components can be seen.

Table 4. Results of ACT effect on impulsiveness components mixed analysis of variance

<i>Mauchly's Test</i>		<i>Change source</i>	<i>Sum of squares</i>	<i>Degree of freedom</i>	<i>Mean of squares</i>	<i>F</i>	<i>Partial Eta-Squared</i>
<i>Degree of freedom</i>	<i>significance</i>						
2	.565	Intervention main effect	2058.68	2	1029.34	59.23*	0.730
		Intervention \times group	40.36	2	2.018	1.16**	0.050
		error	763.85	44	17.36		
2	.542	impulsiveness	4339.01	2	2169.50	115.70**	0.840
		Impulsiveness \times group	93.53	2	46.76	2.49***	0.100
		error	825.11	44	18.37		
2	.867	Intervention Main effect \times Impulsiveness	153.46	4	38.37	1.84	0.077
		Intervention \times Impulsiveness \times group	35.44	4	8.86	0.43	0.019
		error	1831.54	88	20.81		

* $P < 0.001$, ** $P > 0.05$, *** $P < 0.05$

Interpretation of the results in the table shows that the main effect of the intervention ($F(44,2)=59.23$; $p < 0.001$, Partial Eta-Squared=0.73) is significant. In terms of impulsivity, components in groups of patients with bipolar disorder and major depressive disorder in three periods (before, during and

after the intervention) show significant differences. Interactive effect in the intervention group ($F(44,2)=1.16$; $p > 0.05$, Partial Eta-Squared=0.050) is not significant. Therefore, there is no significant interaction between patients groups and intervention; the main effect of impulsivity ($F(66,3)=115.70$;

$p < 0.001$; Chi Eta share=0.84) is significant. In terms of the components of impulsivity there are differences in the group of patients with bipolar disorder and patients with major depressive disorder; and interactive effect of impulsivity in the group ($F(66,3)=2.49$; $p < 0.05$, Partial Eta-Squared=0.10) is significant, that is in both groups there are significant differences in the components of impulsivity.

It can be seen in many levels, there are significant differences between subjects and their interactions. However, the direction and source of these differences is not clear in the mixed analysis of variance. To show the details of the differences, an appropriate post-hoc test

and paired comparison analysis is required. To evaluate a significant difference, Bonferroni post hoc test was used, and the results are presented in Table 5.

Based on the results presented in table 5 and significance levels inserted in the table, it can be seen that there are significant differences in all components of impulsivity between the pre-test and post-test, whereas this difference is not significant for the pre-test and the mid-intervention. In other words ACT has led to improvement in the components of impulsivity in both groups of patients with bipolar disorder and patients with major depressive disorder

Table 5. Results of Bonferroni ad hoc test for paired differences in impulsivity components in intervention modes

Dependent variable	Intervention mode	group	Mid-intervention (middle)		After intervention (post-test)	
			Mean difference	Standard deviation	Mean difference	Standard deviation
Impulsiveness Cognitive / attention	Before intervention (pre-test)	BMD	-1.34	0.29	4.75	1.19
		MDD	-1.67	0.58	2.16	0.78
Motor	Before intervention (pre-test)	BMD	-1.67	0.18	7.83	1.15
		MDD	-1.41	0.57	8.66	1.28
Non-planning	Before intervention (pre-test)	BMD	-2.67	0.35	5.50	1.20
		MDD	0.00	0.17	7.08	1.39

Discussion

The aim of this study was to examine the effectiveness of ACT on the impulsivity and cognitive estimation of bipolar and major depression patients. The results indicate that due to ACT, the components of impulsivity in both groups of patients with bipolar disorder and patients with major depressive disorder decreased.

The results of the present study is consistent with several studies [3-5, 8-9, 21, 40-42] that had found ACT as being effective in reducing impulsivity (which is a common feature of major depression and bipolar disorders), and is not consistent with other studies [6-7] that had found that ACT had no significant effect in reducing the impulsivity of people with mood

disorders, particularly depression and bipolar disorder.

Impulsivity is a multidimensional concept that is defined as being caught on acts without forethought and quick response to stimuli that often have maladaptive consequences [11]. In major depressive disorder and bipolar disorder, impulsivity is considered as one of the fundamental dimensions of suicidal attempts and behaviors [8, 13, 18, 43-45]. Increased impulsivity can independently predispose individuals to create and sustain impulsive and psychopathology related behaviors. Impulsive individuals without considering the effects of their activities, carry out immediate acts. These people have difficulty in controlling their responses and prefer immediate rewards to delayed outcomes [19].

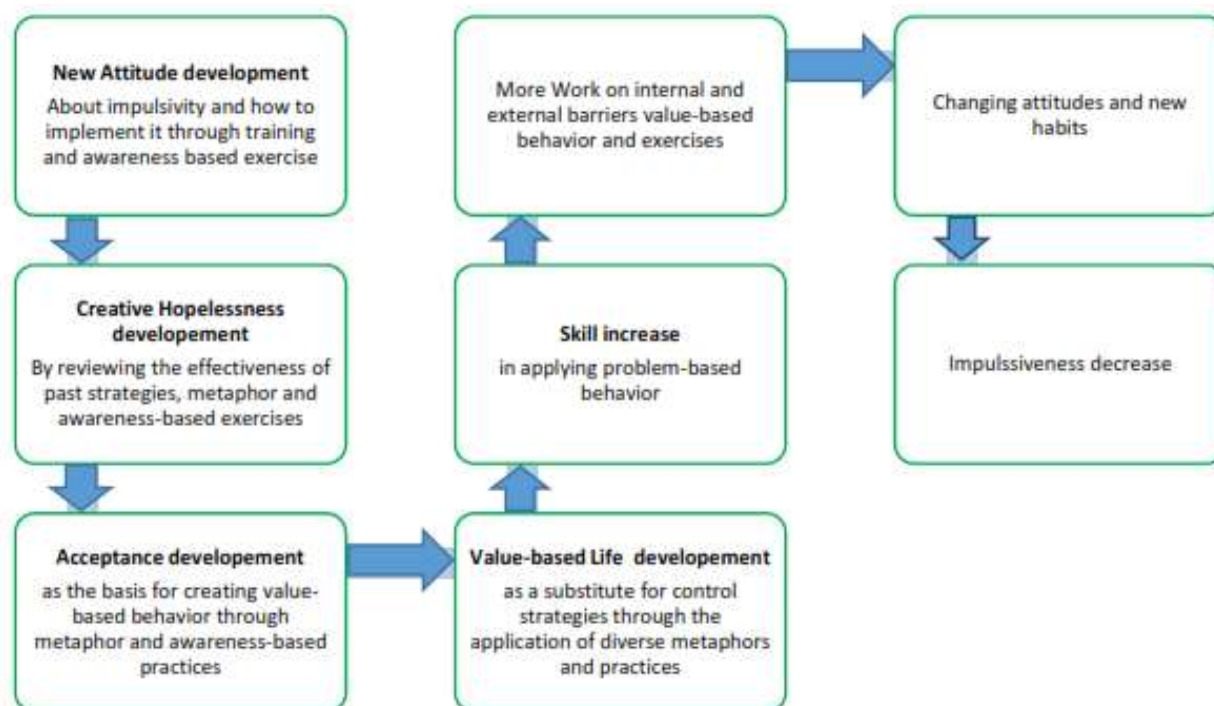


Figure1. Process of change in ACT [46]

Based on the aforementioned model, ACT firstly through training, provides a platform for more positive attitude to impulsivity related thoughts and feelings and then through daily mindfulness-based exercises, provides the context for the creation of creative helplessness about control solutions of the individual in relation to impulsivity related thoughts and feelings. Consequently, a situation is created in clients who have the feeling of helplessness and frustration about their past solutions for controlling their impulsivity states. This mode provides the groundwork for the introduction of acceptance as an alternative. Creating acceptance and reducing combat with internal states create a new time and space for clients to deal with his or her important and valuable issues of life. Indeed, it can be said that this will allow clients to focus on the problem-based behavior rather than the previous and unsuccessful solution, and this reduces impulsivity and breaks its cycle. Finally, by continuing to work and stabilizing new habits and attitudes, ones impulsivity would be reduced [19].

Also inducing motivation to act responsibly, namely activities towards the specified goals and values, along with the admission of mental experience, can be regarded as an important aspect of ACT in reducing impulsivity in BMD and MDD. In addition, ACT through the creation and development of "acceptance" in clients, causes treatment changes that by mindfulness based exercises lead to admission of psychological symptoms in clients, which has been true about reducing impulsivity. Since it is necessary before trying to improve the performance of clients, to help them accept their psychological symptoms with compassion and kindness, as part of their existence. Moreover, the aim of this approach is that the patients learn how to leave distress suppression ideas, to defuse their minds from annoying thought, possibly bear more unpleasant emotions and consequently reduce their impulsiveness [35].

Another reason for the decrease in impulsiveness can be due to the direct impact of practices and experiences on the treatment. Because ACT is basically a treatment based on experiences, concepts, attitudes and behaviors

of therapist, interest are transmitted to clients through practices that lead a person to direct experience. In this treatment, unlike many other treatments, no value or no particular life style has been imposed on the client. Instead, clients make decisions about change based on their values system [47]. Increased impulsivity can independently predispose individuals to develop and sustain impulsive and psychopathology related behaviors. In addition, impulsivity through the damage and impairment in different executive functions causes problems and negative consequences for individuals. ACT through acceptance and awareness, has made people aware of their performance and able control the factors, have more focus and control over their behavior. Besides, through participating in various exercises that focused on removing internal and external barriers, and especially the use of problem-solving skills, clients able to control their behaviors and subsequently the amount of their impulsivity would be reduced. Developing new habits, attitudes and behaviors reinforces the individual's behavioral and intellectual treasury, which subsequently leads to a more proportionate behavior when faced with different problems, and in dealing with different variables; they can manage and control the outcomes. In this treatment first, the individual's psychological admission to mental experiences (thoughts, feelings) is increased and ineffective control is reduced. It also adds to the psychological awareness of individual at the moment, and is also taught to separate him or her from these mental and emotional experiences and reduce effort to concentrate excessively on himself or herself. This approach teaches patients how to tolerate unpleasant emotions more and subsequently have their impulsivity reduced. It also reduces impulsivity by focusing on eliminating internal and external barriers, and in particular using problem-solving skills and developing acceptance and awareness. In this regard, it is suggested that through the planning and training the patient and those around him, and interventions based on the acceptance and commitment approach to empower the patient and his family, this would prevent or reduce the problems and consequences of these disorders.

It is also suggested that therapeutic approaches such as acceptance and commitment therapy due to its mechanisms such as acceptance, increased awareness, momentary presence, observation without judgment, and experiential avoidance to increase the effectiveness of treatments, should be integrated with cognitive behavioral therapy techniques. It is recommended that this treatment be considered as one of the auxiliary, supportive and rehabilitation therapies along with drug therapy to reduce the symptoms and consequences of BMD and MDD. The limitations of the present study include single-sex sample, lack of group ACT protocol, data collection with self-reported data and lack of follow-up. Therefore, in future research the use of other gender, group treatment protocol and other measurement methods such as structured clinical interviews, behavioral grading scale and direct evaluation of behavior, and follow up for better generalization and assessment of the sustainability of treatment is recommended.

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