

Research Paper:**Effect of Acceptance and Commitment Therapy on Impulsivity of Patients With Methamphetamine Use Disorder***Mahdi Yousefi¹, Seyed Jalal Younesi², Ali Farhoudian³, Mohammad Hadi Safi⁴

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ABSTRACT

Objective Executive functions and impulse control ability are severely impaired in people with amphetamine use disorders. In this regard the study aims to decrease impulsivity in patients with Methamphetamine use disorder by using Acceptance and Commitment Therapy (ACT).

Materials & Methods The study is a quasi-experimental study with a pretest-posttest control group design. The study population included all men under treatment with Methamphetamine use disorder in 2019 in Yazd city. The sampling method was purposive sampling. Among those who scored higher than the cut-point according to Bart's Impulsivity Questionnaire (1994), 12 were randomly assigned to the experimental group and 12 randomly assigned to the control group. Descriptive and inferential statistical methods including covariance analysis were used to analyze the data.

Results The results showed that the value of the parameter (F) belonging to the pretest variable was 4.9 and it was significant. Therefore, there was a significant difference between the mean scores of impulsivity of the control and experimental groups in the posttest after the pretest effect was gone in patients with treated methamphetamine use disorder.

Conclusion Finally based on the results of this study, it can be concluded that the ACT as a new and emerging treatment of the third wave of behavioral therapy is a useful intervention for patients with methamphetamine use disorder to reduce their impulsive behaviors.

English Version**Introduction**

A mphetamine dependence is a significant health concern that contributes to the global burden of disease [1]. It is also considered a new health problem in Iranian society [2]. According to the United Nations Office on Drugs and Crime, Iran ranks fifth among the countries with the highest amphetamine use rate [3].

Alammehrjerdi et al. reported that the prevalence of methamphetamine dependence increased from 3.9% among men and women in 2007 to 60.3% among men in 2014 and 89.5% among women in 2015-2016. The prevalence was higher in women than in men [4]. Some studies have shown a difference between the personality traits of men addicted to opiates and methamphetamine. Therefore, recognizing personality and its characteristics can be effective in the prevention and treatment of this problem [9].

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Impulsivity is conceptualized as a cognitive dimension. Impulsivity is associated with a lack of cognitive inhibition and an incomplete decision-making process in individuals. Impulsivity is one of the characteristics of different types of addiction. Functional problems due to impulsivity such as low inhibition, decision making, and planning are major obstacles in treating people with substance use disorders at the beginning, progression, and continuation of treatment. Decreased stimulus or impulse control ability is known as an indicator of addiction [10]. Bickel et al. showed that because of prefrontal cortex damage, executive functions and impulse control ability in impulsive individuals are very poor [12]. For this reason, these people have many problems with purposeful behaviors and self-regulation. Impulsivity causes poor therapeutic outcomes in substance abusers [5, 13].

Based on the evidence, the Acceptance and Commitment Therapy (ACT) is a promising intervention for substance users [14]. Khalbaz et al. reported the effectiveness of group ACT in improving the emotional regulation of methamphetamine-dependent individuals undergoing rehabilitation [15]. Ghouchani et al. reported the effectiveness of ACT in improving aggression of patients with psychosis due to methamphetamine use compared to controls [16]. ACT is a behavioral therapy that focuses on behavior change using acceptance and mindfulness strategies instead of focusing on reducing symptoms. Therefore, we hypothesized that ACT could treat impulsivity in rehabilitated methamphetamine-dependent individuals.

Materials and Methods

This is a quasi-experimental study with a pre-test and post-test and follow-up design. The study population consists of all men with Methamphetamine Use Disorder (MUD) who were in the abstinence period and participated in the meetings of the Association of Anonymous Addicts in Yazd City, Iran, in 2018. Through the purposive sampling method, 24 samples were selected from among those who had a larger Barratt Impulsiveness Scale (BIS) score and met the inclusion criteria, and then randomly divided into the intervention (n=12) and control (n=12) groups. The inclusion criteria were the ability to communicate verbally, minimum literacy to read and answer the questions, complete abstinence and non-use of methamphetamine at least in the last 6 months, completion of treatment in the past 6 months, aged 18-60 years, and no mental or physical disability that can avoid participation and evaluation. The exclusion criteria were recurrence and re-use of methamphetamine at the time of participation in the study and having AIDS or hepatitis.

To collect data, a demographic form with 13 items (surveying age, education, occupation, etc.) and the BIS ques-

tionnaire were used. Barratt developed the BIS in 1994 [20]. Its scores are very well related to Eisenhower's impulsivity questionnaire, and the questions indicate dimensions of bad decision-making and lack of planning. It has 30 items rated on a 4-point Likert-type scale and three subscales of attentional impulsiveness, motor impulsiveness, and non-planning impulsiveness. By summing the scores of the three subscales, the total score is obtained. The maximum score is 120. ACT was applied to the intervention group in eight sessions of 60 minutes, while the control group received no intervention. However, to comply with the ethical principles, a meeting was held for the control group to become familiar with the concepts of ACT. The ACT protocol was adapted from Khalbaz et al. study [15]. The obtained data were analyzed using descriptive statistics (frequency, percentage, mean, and standard deviation) and inferential statistics such as ANCOVA and the Kolmogorov-Smirnov test (to evaluate the normality of data distribution).

Results

The mean age of participants in the intervention group was 38.66 years, and the mean age of the control group was 38.00 years. Most participants in the intervention group (25%) had primary and secondary education, and in the control group (33.3%) had primary education. Most of them in the intervention and control groups were employed in the private sector (33.3% and 41.7%, respectively) and lived in rented houses (83.3% and 41.7%, respectively). Table 1 presents the mean and standard deviation of pre-test and post-test scores of the BIS and its subscales. The results showed a decrease in the overall score and subscale scores of the BIS after the intervention. The Kolmogorov-Smirnov test results showed the normal distribution of scores of the two groups in all variables ($P > 0.05$). The results of Levene's test showed the equality of variances in the scores. To investigate the homogeneity of regression slope, the interaction of the independent variable with the covariates was measured. Since the value of the F statistic was not significant for any of the variables, so the assumption of homogeneity of regression slope was confirmed. It should be noted that in this study, post-test scores of attentional, motor, and non-planning impulsiveness were considered as dependent variables, and their pre-test scores were considered as covariates. If the interaction between the pre-test and the group is not significant for the dependent variables (post-test), then the regression slopes are parallel in the intervention and control groups.

The research hypothesis was that ACT reduces the impulsivity of improved patients with MUD. ANCOVA was used to test the hypothesis. The results are presented in Table 2. The value of F for the overall BIS pre-test score

Table 1. The Mean and Standard Deviation of pre-test and post-test scores of the BIS and its subscales

Variables	Mean±SD			
	Intervention Group		Control Group	
	Pre-test	Post-test	Pre-test	Post-test
Total Barratt Impulsiveness scale	74.83±4.74	64.66±5.22	76.75±7.99	70.75±4.42
Non-planning	24.00±3.39	22.66±4.35	26.58±4.25	25.16±3.88
Motor	19.25±4.33	13.16±2.36	26.75±2.86	20.66±2.77
Attentional	22.58±2.93	15.83±3.99	24.41±4.48	19.58±3.84

Archives of
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Variables	Source	Sum of Squares	df	Mean Square	F	Sig.	Eta Squared
Total Barratt Impulsiveness scale	Pre-test	114.66	1	114.66	4.19	0.026	0.229
	Group	124.92	1	124.92	5.13	0.034	0.196
	Error	510.91	21	24.32			
Motor	Pre-test	4.853	1	4.853	5.314	0.0001	
	Group	0.301	1	0.301	3.898	0.0001	
	Error	6.891	27				
Attentional	Pre-test	5.402	1	5.402	6.001	0.0001	
	Group	0.288	1	0.288	4.457	0.0001	
	Error	7.092	27				
Non-planning	Pre-test	4.319	1	4.319	8.314	0.0001	
	Group	0.355	1	0.355	6.102	0.0001	
	Error	9.223	27				

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was 4.19 ($P<0.05$). Hence, there was a significant correlation between the pre-test overall BIS and the group factor (independent variable). The value of F for the group factor of pre-test overall BIS was 5.13 ($P<0.05$). Hence, there was a significant difference in the mean overall BIS score of MUD patients between the control and intervention groups in the post-test phase. Therefore, this result supports our hypothesis. The values of F for the pre-test scores of the three BIS dimensions were also significant ($P<0.05$). Thus, the correlation between the pre-test scores of these BIS dimensions and the group factor was reported. The values of F for the group factor of BIS dimensions were also significant

($P<0.05$). Hence, there was a significant difference in the mean scores of BIS dimensions in MUD patients between the control and intervention groups in the post-test phase.

Discussion

In this study, ACT in 8 sessions of 60 minutes reduced impulsivity and its three dimensions in rehabilitated MUD patients. Despite the low number of studies on the effect of ACT on impulsivity of MUD patients, it can be said that the results of the present study are consistent with the results of Morrison et al. [22], Gomez et al. [23], Nadimi [24],

Borjali et al. [25] and Aazam et al. [26]. They reported that the third-wave behavioral therapies, including ACT, could effectively reduce impulsivity and impulsive behaviors. People addicted to methamphetamine have difficulty controlling their impulses. Improving impulse control ability by ACT can reduce aggression and its dimensions [27]. Impulsivity is recognized as a hallmark of addiction. It is associated with various high-risk behaviors and poor therapeutic outcomes in substance abusers [10, 13]. Addicted people, who lack a rational and efficient strategy towards problems, often use inefficient and often aggressive methods in dealing with issues and people [28]. However, lower impulsivity decreases the likelihood of substance abuse and related problems [29].

One of the reasons for the effectiveness of ACT on reducing impulsivity is the mindfulness technique, which is one of the important processes of ACT. Although Mindfulness and impulsivity have common features, they have fundamental functional differences [31]. Both focus on the present time, but in a different way. Mindfulness highlights the transient nature of everything. Mindfulness emphasizes the value of awareness of actions that involve paying attention to, observing, and describing an experience without judgment. Impulsivity indicates an excessive focus on the present time, which prevents people from watching the consequences of their actions. Therefore, mindfulness aims to increase awareness of values and promote activities following the pursued goals, while impulsivity is defined as behaving without thinking about its long-term consequences. Mindfulness can help raise awareness of automatic thoughts, thus increasing a person's ability to consider the potential consequences of actions before engaging in them.

Raising awareness may improve self-regulation, which is essential when facing severe sudden pulses for having behaviors that may have negative consequences. ACT is based on the premise that distorting cognitive processes increases unpleasant feelings. It can help people avoid problematic behaviors such as alcohol consumption, substance abuse, or high-risk sexual behaviors [32], resulting in reduced unpleasant feelings. In facing negative emotions, people cannot focus on their purposeful activities. People who experience negative emotions face more problems, such as loss of concentration or ineffective problem-solving. After receiving ACT and directly accepting and experiencing unpleasant feelings, one focuses on having a worthwhile life instead of cognitive change or reducing the intensity of emotions [33]. Emotional disturbances lead to loss of control, and people become prone to do and say things they do not usually commit. Therefore, it can be said that people with these conditions are drawn to substance abuse, which is a lousy option in response to difficulties and problems. This issue

can be raised to increase positive emotions and avoiding negative emotions. From the perspective of ACT, the limitation of behavioral options is the heart of psychotherapy. MUD patients choose more flexible and sustainable options for their value-based behaviors [34]. Therefore, strategies such as mindfulness and ACT can reduce impulsivity and especially behaviors such as substance abuse.

Conclusion

The ACT, as emerging third-wave behavior therapy, is a beneficial interventional method for rehabilitated MUD patients to reduce their impulsive behaviors. Therefore, applying the main concepts of ACT to these patients has a significant and undeniable role in increasing their mental health and improving their quality of life and lifestyle.

Ethical Considerations

Compliance with ethical guidelines

This study obtained its ethical approval from the Research Ethics Committee of the University of Social Welfare and Rehabilitation Sciences (Code: IR.USWR.REC.1397.110).

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Authors' contributions

All authors equally contributed to preparing this article.

Conflict of interest

The authors declared no conflict of interest.

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