

# Effects of Acceptance and Commitment Therapy on the Psychological Capital and Temptation of Methadone-Maintenance Treated Patients

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## Abstract

**Background:** Addiction is a condition in which a person makes bad habits, such as the use of drugs, nicotine, and alcohol. Objectives: The present research aimed to assess the effectiveness of the Acceptance and Commitment Therapy (ACT) in the psychological capital and temptation of methadone-maintenance treated patients.

**Methods:** This quasi-experimental study was conducted based on a pretest-posttest control group design. The statistical population consisted of all methadone-maintenance treated patients in substance addiction treatment clinics in Mashhad. From this population, 30 people were randomly selected by simple random sampling (with replacement) and assigned to two groups of experimental (n=15) and control group (n=15). The data collection tool was Luthans's Psychological Capital Questionnaire and Wright's Craving Beliefs Questionnaire. The data were analyzed in SPSS software (version 21) using univariate and multivariate covariance.

**Results:** Based on the research findings, the ACT approach had a positive and significant effect on psychological capitals and its components (self-efficacy, hope, resiliency, and optimism) ( $P < 0.001$ ). Furthermore, it exerted a significant effect on the reduction of temptation and relapse in methadone-maintenance treated patients ( $P < 0.001$ ).

**Conclusion:** As evidenced by the obtained results, it can be concluded that the ACT can increase psychological capital and reduce the temptation of methadone-maintenance treated patients.

**Keywords:** Acceptance and commitment therapy, Motivation, Methadone

## 1. Background

Addiction is a condition in which a person makes bad habits, such as the use of drugs, nicotine, and alcohol, as well as sexual intercourse and gambling, which are converted to a compulsive behavior over time (1). An important issue in addiction is that although many addictive behaviors, such as smoking, may initially begin with experience, they eventually lead to long-term addiction (2). According to Browne et al., opioid exposure brings about long-term changes in the brain regions related to reward and motivation, triggering drug craving in vulnerable individuals (3). Scholz stated that appropriate and principled intervention can change the most stubborn destructive habits, such as drug addiction (2).

Luthans and Avolio indicated that substance abuse can be prevented by some protective factors, such as psychological capital (4) which focuses on strengths and positive aspects of behavior (5). Psychological capital is an interconnected concept comprising of four dimensions (6), including self-efficacy, optimism, hope, and resiliency, which are measurable positive psychological capacities (7).

In their study, Rabenu, Yaniv, and Elizur pointed to the positive and direct relationship of psychological capital with health and performance

(8). In the same context, Rashidi et al. (9) concluded that psychological capital has a negative relationship with addiction.

Sadeghi and Karimi (10) also suggested that psychological capital training is effective in the enhancement of cognitive flexibility and resilience in addicted people. Pourmehdi Mikal (11) stated that the recognition of positive psychological capitals can curb substance abuse tendency; moreover, even effective treatment can be selected according to the conditions of substance-dependent addicts. Another variable assessed in this research was temptation which is a strong desire to consume substances (12). The temptation is the most serious threat posed to addicts under treatment which leads to the relapse to substance use and must be carefully controlled and recognized (13).

In recent decades, some psychotherapists have tried to use new approaches in psychotherapy, such as Acceptance and Commitment Therapy (ACT) which is one of the treatments related to third-wave behavioral therapy aiming at psychological flexibility (14). The ACT approach is a psychological intervention which helps people to be open to their inner feelings and accept painful experiences instead of avoiding or escaping them (15).

Based on Hayes et al., this treatment encompasses six therapeutic processes of

contacting the present moment, defusion, acceptance, self-as-context, values, and committed action. In this treatment, it is initially tried to ensure that the clients have psychological acceptance about their mental experiences, their present-moment

addicted to all limitations), and they are taught to release themselves from these experiences (16).

This treatment aims to reduce empirical avoidance and increase psychological flexibility. A person with psychological flexibility does not avoid unwanted events and does not try to change or control them; therefore, instead of confrontation, he/she avoids unwanted events by spending his/her energy on values and the quality of life (17). In 2010, the ACT was added to the National List of Evidences-Based Programs and Practices of the United States Substance Consumption and Mental Health Services Administration (18). In recent years, various studies have affirmed the effectiveness of ACT in substance abuse disorders (19). Regarding severe substance abuse, evidence suggested that ACT is as effective as other treatment methods (20). The ACT can markedly reduce substance abuse temptation among patients (21). In this regard, Krasikova, Lester, and Harms assessed the relationship of positive psychological capital with mental health and substance abuse. The results of the referred study pointed out that people with a high capacity of psychological capital are less likely to abuse substances (22).

In the same context, Dehghani and Rezaei carried out a study entitled " Effectiveness of acceptance and commitment therapy in the quality of life of the methadone-maintenance treated patients" (23). The results of the mentioned study indicated that acceptance and commitment therapy techniques are effective in the quality of life in methadone-maintenance treated patients. Along the same lines, the results of a study by Naghavi et al. (24) demonstrated that the ACT group- counseling caused significant changes in participants' psychological flexibility. In this regard, Arjomand et al. also reported that ACT is effective in the reduction of substance use temptation and relapse in methamphetamine-dependent patients (25).

Therefore, considering the destructive effects of addiction on individuals, families, and society, it is indispensable to develop effective treatment strategies and methods for the treatment and control of addiction. Detoxification is the first step in addiction treatment which is a long and hard recovery process. When drug abusers stop taking drugs, they may experience a long period of psychological and physical withdrawal symptoms. The importance of the present study lies in determining the effect of ACT which puts an emphasis on the psychological relationship between an individual and his/her thoughts and feelings to better investigate the effectiveness of psychological capital in the reduction of relapse and

temptation in methadone-maintenance treated patients.

## 2. Objectives

The present study aimed to assess the effectiveness of the ACT in psychological capital and temptation of methadone-maintenance treated patients.

## 3. Methods

The present quasi-experimental research was conducted based on a pretest-posttest control group design. The statistical population included all methadone-maintenance treated patients in addiction treatment clinics from May to July 2018. From this population, 30 people were randomly selected by simple random sampling (with replacement) and assigned to two groups of experimental (n=15) and control group (n=15). The required sample size was calculated at 30 in total based on effect size= 0.40,  $\alpha=0.95$ , test power (1 -  $\beta$  err prob) = 0.80, and 10% sample attrition for each group. The inclusion criteria entailed: the age range of 20-45 years, male gender, a minimum of secondary school education, opium addiction, and being under methadone-maintenance treatment. On the other hand, the exclusion criteria were absence from more than two therapy sessions, and not doing the assignments.

The ethical considerations of this study were as follows: All participants received written information about the research and their participation was voluntary. Participants were assured that all information was confidential and would be used for research. To respect privacy, the participants' names and surnames were not registered. This study was approved by the Ethics Committee of Islamic Azad University of Torbat-e-Jam (IR. IAU. TJ. REC.1399.009).

The required data were collected by a trained researcher. Among the statistical population, the statistical sample was formed using a purposeful method based on inclusion and exclusion criteria. These 30 subjects were matched in terms of demographic characteristics, such as the number of recurrences, age, gender, education, and socioeconomic status, which could affect the results of the study. Subjects were randomly assigned to two groups of 15 (one experimental group and one control group). In both groups, a pre-test was performed to determine the dependent variables of the study; thereafter, a group of 15 people received the ACT (eight two- hour sessions) by an experienced person. After the end of the training (about three months), the variables were measured again. At the commencement of each session, the assignments of the previous session were reviewed, the training was administered. At the end of the sessions, questions and answers were made, and the participants'

problems were resolved.

### Psychological Capital Questionnaire (PCQ)

This questionnaire was designed by Luthans (2007) and it is widely used to assess constructs, such as hope, resilience, optimism, and self-efficacy, and the validity and reliability of these subscales have also been proven

This questionnaire consists of 4 subscales and 24 items which are rated based on a six-point Likert scale (I completely disagree=1, I disagree=2, I somewhat disagree=3, I somewhat agree=4, I agree=5, and I completely agree=6). To obtain the psychological capital score, the score of each subscale is obtained separately, and their sum is considered the total score of the psychological capital. The results of the confirmatory factor analysis indicated that this test has the factors and

constructs desired by the test designers. The results of the factor analysis confirmed the validity of the test construct. The Chi-square ratio of this test is equal to

24.6 and the statistics of comparative fit index (CFI)

and the root mean square error of approximation (RMSEA) in this model are 0.97 and 0.08, respectively (26). Moreover, in the research by Bahadori Khosroshahi, the Cronbach alpha reliability coefficient of this questionnaire was obtained at 0.85 (27).

### Craving Beliefs Questionnaire (CQB)

This 20-item questionnaire was designed by Wright patients' maladaptive beliefs and temptation to use drugs. To obtain the total score of the questionnaire, the total scores of all questions are added together. The scores range from 20-140. Higher scores will indicate a greater temptation of the respondent for substance consumption, and vice versa. This test has good validity and reliability, and its Cronbach alpha reliability coefficient has been reported as 0.95. Moreover, its face and content validity have been confirmed by relevant professors and experts (28).

The ACT training sessions were conducted in eight two-hour sessions for methadone-maintenance treated patients in the experimental group. The ACT training protocol is as follows.

**Table 1. Acceptance and Commitment Therapy Approach Training Protocol (29)**

<b>Sessions Content</b>
Session 1: Familiarity of the group with each other and the treatment team, familiarity of subjects with symptoms after substance quitting, description of treatment steps and sessions, Each one of the members took note of cases about the course of quitting symptoms from the first day until now.
Session 2: Examining the inside and outside world in ACT, in this stage, a desire and interest to leave the inefficient programs of the past were presented.
Session 3: Identifying people's values and stating goals clearly (for example, as a practice, members close their eyes and imagined that they had quitted and had returned to their family. This scene was imagined how their child will describe the father and how they will express their new self. Thereafter, the important cases that have been started during the exercise will be written by each person.
Session 4: Examining the values of individuals as a group
Session 5: Performing exercises to tackle problems.
Session 6: Teaching the conceptualization of self-integration and how to deal with it.
Session 7: Doing exercises to strengthen mindfulness (while sitting, people should hear exactly all the surrounding sounds or at the same state distinguish which part of their body surface is in touch connection with a specified place).

All data were collected, and analyzed by SPSS software (version 25). At first, the normality of data distribution was determined using the Shapiro-Wilk test, and subsequently, to describe the demographic information, mean, percentage, standard deviation, and frequency distribution tables were used. Eventually, the role of training of emotional self-regulation strategies and coping with pain was investigated through mixed analysis of variance.

the descriptive statistics section, frequency tables and charts, as well as central indices and distribution indices, such as mean and standard deviation, were

calculated. In the inferential statistics section, the multivariate analysis of covariance (MANCOVA) was used. The above-mentioned statistical analyses were performed in SPSS software (version 22).

### 4. Results

The present research was conducted on 30 subjects who were assigned to the two groups of experimental and control (n=15 in each group) with the mean age scores of  $34.67 \pm 8.98$  and  $34.07 \pm 7.25$ , respectively, signifying that these two groups were homogeneous in terms of age.

Regarding education, the majority of subjects in two groups of experimental (46.7%) and control (53.3%) hold a diploma. In the experimental group, the longest duration of substance

abuse was 20 years in 2 (13.3%) cases, and the highest number of quit attempts was five times in 2 (20%) subjects. In the control group, the longest

duration of substance abuse was 5 years in 3 (20%) subjects, and the highest number of quit attempts was once in 4 (26.7%) cases. Table(1) shows the descriptive indicators of the data obtained from the implementation of pre-test and post-test of psychological capital.

**Table 2. Descriptive Indicators of Pre-Test and Post-Test Data of Tested Scales**

Variable	Stage	Group	Mean	SD	Min.	Max.
Self-Efficacy	Pre-Test	Experimental	26.53	4.69	18	32
		Control	26.33	4.97	18	33
	Post-Test	Experimental	28.07	3.24	21	31
		Control	26.53	4.76	18	33
Hope	Pre-Test	Experimental	23.07	8.21	10	34
		Control	22.8	5.89	12	33
	Post-Test	Experimental	26.33	6.6	12	30
		Control	22.8	5.68	13	31
Resiliency	Pre-Test	Experimental	19.47	5.46	12	30
		Control	22.67	5.66	13	32
	Post-Test	Experimental	24.53	6.03	17	35
		Control	23.47	5.67	15	33
Optimism	Pre-Test	Experimental	20.67	5.79	12	32
		Control	16.87	4.42	10	25
	Post-Test	Experimental	24	5.17	15	33
		Control	16.87	3.83	12	24
Psychological Capital	Pre-Test	Experimental	89	16.27	62	119
		Control	88.67	15.49	66	111
	Post-Test	Experimental	102.6	15.17	80	125
		Control	89.67	15.08	65	115
Temptation	Pre-Test	Experimental	73.47	24.53	40	102
		Control	86.33	21.64	45	110
	Post-Test	Experimental	56.73	22.66	25	90

The results of the Levene's F test to examine the homogeneity of variances in the pretest of the two experimental and control groups indicated that the calculated equality of variances (Levene's F) was not significant at the level of  $P>0.05$ . Therefore, it can be concluded that there was no significant difference between experimental and control groups in the scores of this scale in the pre-test. This presupposition points to the homogeneity of variances in the pre-test of the two groups. One-way Kolmogorov-Smirnov test was employed to investigate the distribution normality of the variables in the target population.

The results illustrated that Z-Kolmogorov-

Smirnov was not significant for the tested variables in both groups ( $P>0.05$ ); therefore, it can be concluded that the scores were normal and this presupposition of using covariance was also observed. Furthermore, the test of variance-covariance homogeneity hypothesis (Box's  $M=14.94$ ;  $F=1.26$ ;  $Sig=0.25$ ) suggested that the significance was higher than 0.05, pointing to equality in the observed covariance matrices of quantitative variables of each factor. Table 3 displays the results of multivariate analysis of covariance of the effect of ACT training on the enhancement of psychological capitals of methadone-maintenance treated patients

**Table 3. Results of the Analysis of Covariance of the Effect of Acceptance and Commitment Therapy (ACT) Approach Training on the enhancement of Psychological Capitals of Methadone Treated Addicts**

Effect	Test	Value	FStatistics	dfHypothesis	dfError	Sig.
The difference between the experimental group in the post-test and the control group in the pre-test	Pillai's Trace	0.97	208.93 b	4	24	0.001
	Wilks' Lambda	0.03	208.93 b	4	24	0.001
	Hotelling's Trace	34.82	208.93 b	4	24	0.001
	Roy's Largest Root	34.82	208.93 b	4	24	0.001
	Root					

According to Table 3, post-test scores of the tested variables for the experimental and control groups, after removing the pre-test effect by multivariate analysis of covariance method, the results indicated that there was a significant effect for the treatment method factor. This

effect demonstrated that there was a significant difference between the two groups at least in one of the variables of self-efficacy, hope, resiliency, and optimism ( $P < 0.001$ ). Table 4 depicts the results of the univariate analysis of covariance in the text of multivariate analysis of covariance for each one of the test cases on methadone-maintenance treated patients.

**Table 4. Univariate Analysis of Covariance in the Text of Multivariate Analysis of Covariance for Variable**

Sources of Index Change		SS	df	MS	F	Sig.
<b>The difference between the experimental group in the post-test and the control group in the pre-test</b>	Self-Efficacy	5450.49	1	5450.49	469.78	0.001
	Hope	3043.16	1	3043.16	182.47	0.001
	Resiliency	3647.93	1	3647.93	145.4	0.001
	Optimism	2475.73	1	2475.73	173.2	0.001

As observed in Table 4, there is a significant difference between the subjects in the experimental group who received the ACT training and the control group who did not receive any training in the variables of self-efficacy ( $F=349.09$ ;  $P < 0.001$ ), hope ( $F=120.69$ ;  $P < 0.001$ ), resilience ( $F=217.96$ ;  $P < 0.001$ ),

and optimism ( $F=180.20$ ;  $P < 0.001$ ). In other words, ACT approach training improved these variables. Table 4 shows the effect of univariate analysis of covariance on the effect of ACT approach training on the enhancement of psychological capital of all methadone- maintenance treated patients.

**Table 5. Results of the Analysis of Covariance of the Effect of Acceptance and Commitment Therapy Approach Training on the enhancement of Psychological Capital of All Methadone Treated Addicts**

	SS	df	MS	F	sig	Eta	StatisticalPower	
<b>Pre-Test</b>	229.14	1	229.14	8.42	0.007	0.24	0.80	
<b>Intervention</b>	6924.3	2	3462.15	127.5	0.001	0.90	1.00	
<b>Error</b>	735.17	27	27.23					

The results of the analysis of covariance test in Table 5 pointed out that the effect of ACT approach training on the enhancement of psychological capitals is significant in all methadone treated addicts after adjustment for the pre-test scores. The impact coefficient is 0.90 and the statistical power is 1.00; that is to say, there is a 90% probability that the difference is due to the intervention. Therefore, it can be concluded that the ACT approach training has an

effect on the enhancement of psychological capital of all methadone- maintenance treated patients and significantly increased all of their psychological capital scores, compared to the control group in the post-test stage. Table 6 displays the analysis of covariance of the effect of ACT approach training on the reduction of substance abuse temptation in methadone-maintenance treated patients.

**Table 6. Results of the Analysis of Covariance of the Effect of Acceptance and Commitment Therapy Approach Training on Reducing the Temptation of Methadone Treated Addicts**

	SS	df	MS	F	sig	Eta	Statistical Power
<b>Pre-Test</b>	11.49	1	11.49	0.25	0.62	0.009	<b>0.08</b>
<b>Intervention</b>	18974.12	2	9487.06	205.14	0.001	0.94	<b>1.00</b>

The results of the analysis of covariance test in Table (6) suggest that ACT approach training has significant effects on the temptation of methadone-maintenance treated patients after adjustment for pre-test scores. The impact coefficient is 0.94 and the statistical power is 1.00; that is to say, there is a 94% probability that the difference is due to the intervention. Therefore, it can be concluded that the ACT approach training is effective in the temptation of methadone treated addicts and significantly reduced their temptation scores, compared to the control group in the post-test stage.

## 5. Discussion

The present research was conducted to evaluate the effectiveness of ACT in the psychological capitals and temptation of methadone-maintenance treated patients. As evidenced by the obtained results, in methadone-maintenance treated patients in the experimental group, the psychological capital increased and substance use temptation decreased, compared to the control group. Therefore, it can be concluded that the ACT training program can change these variables and can be used in substance addiction treatment centers. This finding is in line with those reported by Lee (29) and Smout et al. (19), Lee et al. (20), Krasikova, Lester, and Harms (22). It is also in agreement with the findings of the studies by Badger et al. (21), Dehghani and Rezaei (23), Naghavi et al. (24), and Arjomand Ghajoor et al. (25).

In this regard, Lee (29) carried out a study entitled "Effectiveness of Acceptance and Commitment Therapy (ACT) Group Therapy in Psychological Flexibility, Self-Compassion, and Recovery in Alcoholics Addicts". The results of the stated study demonstrated that the ACT program caused positive changes in psychological flexibility, including acceptance, cognitive deficit, presence, the act of commitment, self-compassion, and recovery in alcoholic addicts. Lee et al. (20) also showed that the ACT approach causes people to learn meaningful patterns of activity by acceptance and mindfulness instead of responding to consumption craving, and these patterns are inconsistent with the use of substances (19). Smout et al. (19) also concluded that ACT is effective in the reduction of severe substance abuse (18).

In the same context, Krasikova, Lester, and Harms (22) also pointed out that people with a high

capacity for psychological capital are less likely to abuse substances. Along the same lines, Badgar et al. (21) also indicated that the ACT method reduced substance use temptation. Dehghani and Rezaei (23) also pointed out that the ACT is effective in the quality of life among methadone-maintenance treated patients. Naghavi et al. (24) also pointed to the effect of the ACT group counseling on the psychological flexibility of the subjects. In their research, Arjomand et al. (25) referred to the effectiveness of the ACT in the reduction of substance use temptation and relapse in methamphetamine-dependent patients.

These findings can be justified on the ground that the main purpose of this treatment is to give life meaning and value. The metaphors and exercises of this therapy are used to integrate mental processes to focus on psychological flexibility as a whole. Metaphors in the ACT approach due to its underlying principles such as awareness, acceptance,

avoidance of empirical avoidance, moment, and observing without judgment can increase psychological flexibility, and the effectiveness of treatment leads to the enhancement of psychological capital variables and reduction of temptation. Hayes and Strosal (17) believe that the goal of ACT is that the process of contacting the present moment, defusion, acceptance, self-as-context, values, and committed action strengthens psychological flexibility. Psychological flexibility releases methadone-maintenance treated patients from the trap of inefficient thoughts, substance use temptations, relapse, and the tendency to use substances.

Among the notable limitations of this study, we can refer to non-participation of female drug abusers; therefore, inclusion of female drug abusers, as well as the role of religious and cultural variables, should be considered in subsequent studies. Furthermore, this treatment should be implemented individually to obtain more accurate results. The results of the current study pointed out that group therapy of reciprocal behavior analysis and ACT affects the temptation and psychological capitals of methadone-maintenance treated patients; therefore, the use of these methods is recommended in substance addiction treatment centers, along with drug interventions. The provision of psychological services and free counseling are other necessities in the promotion of people's health. Furthermore, the families of substance abusers should attend group therapy sessions which are held based on psychological approaches, such as the ACT.

## 6. Conclusion

As evidenced by the research findings, it can be concluded that the ACT approach group training can increase psychological capital and reduce substance use temptation among methadone-maintenance treated patients.

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