



# The Effectiveness of Acceptance and Commitment Therapy on Optimism about Life and Psychological Well-Being in Infertile Women

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## Quantitative Study

### Abstract

**Background:** Fertility has been defined as the ability to reproduce, and it requires the ability to start and maintain a pregnancy. The purpose of this study was to determine the effectiveness of acceptance and commitment therapy (ACT) on optimism about life and the psychological well-being of infertile women.

**Methods:** The present study was a quasi-experimental study with a pretest-posttest design, control group, and follow-up period. The statistical population of this study included all patients with major depressive disorder (MDD) referred to infertility treatment centers in Tehran, Iran, in autumn 2018. The participants consisted of 30 individuals who were randomly divided into an experimental group and control group ( $n = 15$ ). Measurement tools included the Revised Life Orientation Test (LOT-R) (1985) and Ryff's Scales of Psychological Well-being (SPWB) (1980). The experimental group was exposed to the intervention in 8 sessions (90 minutes each), and then, both groups were tested. Furthermore, the follow-up was conducted 1 month later. The collected data were analyzed using multivariate analysis of covariance (MANCOVA) and one-way analysis of covariance (ANCOVA).

**Results:** The results showed that ACT increased optimism, positive relationships with others, independence, environmental mastery, personal growth, purposefulness in life, self-acceptance, and psychological well-being ( $P < 0.05$ ).

**Conclusion:** It can be concluded that ACT can reduce the suffering of infertile women and improve psychological optimism and well-being among them through intellectual acceptance, cognitive impairment, and the pursuit of value-driven behaviors. Thus, it can be used during pregnancy.

**Keywords:** Acceptance and commitment therapy, Optimism for life, Psychological well-being, infertile women

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## Introduction

Today, the purpose of marriage and spouses' expectations of each other has changed dramatically. The necessity for love and intimacy, establishing a close relationship with the spouse, and satisfying emotional-psychological needs are the main reasons for today's couples to get married. Marriage is a social phenomenon that contributes to the stability and order of society. Marriage can ensure continuity and high quality, and the basis of community formation and maintenance of human emotions should be taken into consideration in this phenomenon (Breitbart, Rosenfeld, Pessin, Applebaum, Kulikowski, & Lichtenthal, 2015). Moreover, the increasing breakup of marriages is one of the main challenges of family life in the present age. Divorce rates are also rising in our country, and in this regard, the couples' fertility is an essential factor. Fertility has been defined as the ability to reproduce, and it requires the ability to start and maintain a pregnancy. Infertile women are those who have been unable to get pregnant after at least 1 year of trying without the use of contraception. They have begun treatment and specialists have diagnosed their infertility. It was estimated that 120-180 million women worldwide suffer from the disorder between the ages of 18 and 49 years (Crosby, & Twohig, 2016). In Iran, an infertility rate of 9.24% has been reported (Vahidi, Ardalan, & Mohammad, 2009). Infertile women are among the people in the community who are at risk of psychological trauma (Di Spiezio et al., 2016).

William James believed that despite all the problems people have at different ages, some tend to be happy all the time. They are the ones who do not pay attention to disease, death, killing, and unrest and focus on more pleasant and better things (Feldman, & Kubota, 2015). At first glance, the idea that one can experience psychological well-being despite illness is unacceptable. However, many studies have shown that even under the

worst of circumstances, one can experience psychological well-being. Reef's factors of psychological well-being include self-acceptance, having purpose and orientation in life, personal growth, environmental mastery, self-determination, and positive relationships with others (Fergus, 2015).

The optimism of infertile women is another factor that appears to be affected by female infertility. Optimism is one of the structures that bring about the happiness and well-being of man. "Optimism" is one of the most prominent personality constructs that consists of positive cognitions (Frederiksen et al., 2017). Attention was first drawn to this structure when it was found that many people were not satisfied with their lives despite having many facilities. For this reason, many studies were conducted on life satisfaction and well-being and its related factors. These studies have shown that optimism is one of the factors that can play an important role in life satisfaction and well-being. Optimism refers to a generalized expectation, based on which the person feels that results are pleasant when facing problems. In stressful situations, a high level of optimism is correlated with better psychological well-being (Gillanders, Sinclair, MacLean, & Jardine, 2015).

One of the third wave therapies widely used in physical and psychological health problems is acceptance and commitment therapy (ACT). ACT has 6 central processes: acceptance, defusion, self as context, contact with the present moment, values, and committed action. The major advantage of this method over other psychotherapies is the ability to consider exciting aspects along with cognitive characters to further the effectiveness and continuity of the treatment (Graham, Gouick, Krahe, & Gillanders, 2016). In this treatment, it is essential that a partnership be built between the therapist and the patient because the relationship provides the basis for treatment. When the therapeutic relationship during this

treatment is correct and consistent with its principles, it indirectly enhances acceptance, motivation, continuity of treatment, and moving toward one's values (Hanna et al., 2017). It creates a context in which both effective and ineffective behaviors are called upon to find the skills needed to identify and practice appropriate responses. Increasing psychological flexibility is one of the main goals of ACT. In other words, the individual is helped to break the cycle of avoidance and cognitive fusion (Hughes, Clark, Colclough, Dale, & McMillan, 2017). Researches have shown that cognitive fusion is associated with stress, anxiety, and depression (Martin et al., 2015) and with physical dissatisfaction and eating disorders (Zettle, Rains, & Hayes, 2011) suggested that cognitive fusion is moderated. Gillanders, Sinclair, McLean, and Jardin (2015) have argued that cognitive fusion is the strongest predictor of anxiety syndrome in people with cancer. Due to the increasing number of infertile women and their major problems in the field of optimism and psychological well-being, it seems that many of these infertile women do not have sufficient knowledge and skills to solve such difficulties in infertility. The purpose of this research was to determine the effectiveness of ACT on optimism about life and psychological well-being in infertile women.

## Methods

The present quasi-experimental study was conducted with a pretest-posttest design, control group, and a follow-up period. The statistical population of this study included all patients with extreme depression who referred to infertility treatment centers in Tehran, Iran, in autumn 2018. From among them, 30 people were selected as the experimental group and 15 as the control group. Based on the statistical power, the sample size was determined to be 0.95. The effect size was determined to be 0.25 for each group of 30 individuals.

Research participants were assessed in two stages (pretest and posttest) using the Revised Life Orientation Test (LOT-R) and

Ryff's Scales of Psychological Well-being (SPWB). ACT was implemented in the experimental group in 8 120-minute sessions (1 session per week), and the control group received no interventions. Follow-up was performed 2 months after the posttest. The study inclusion criteria were infertile women within the age range of 25-40 years referred to infertility treatment centers in the autumn of 2018. The study exclusion criteria were age of lower than 25 years or over 40 years and providing incomplete information. The ethical considerations of this study were as follows. All persons received written information about the research and participated in the research voluntarily. The participants were assured that all information would remain confidential and would only be used for research purposes. Moreover, participants' names and identities were not recorded for privacy reasons.

The brief content of each ACT session is presented in table 1.

Optimism Questionnaire: Shearer and Carver developed a self-report summary of the LOT in 1985 to assess the nature of optimism, and revised it later (Zettle et al., 2011). The LOT-R consists of 10 items 6 of which were used in the present study; 3 items were related to negative sentences and 3 were related to positive sentences. The items are scored on a 5-point scale ranging from strongly disagree to strongly agree. The validity of the scale was calculated using concurrent validity. The validity of the LOT-R with the Beck Hopelessness Scale (BHS) has been reported to be 81.0 (Vahidi et al., 2009).

**Ryff's Scales of Psychological Well-being:** Ryff developed the SPWB with 54 questions and 6 subscales in 1980. In later reviews, shorter forms with 84, 54, and 18 questions were also suggested (Ryff & Singer, 2008). In the present study, the version with 54 items and 6 subscales was used. The subscales of this test consist of self-acceptance, positive relationships with others, independence, environmental mastery, purposefulness in life, and personal growth.

**Table 1.** Educational goals of acceptance and commitment therapy

	Objective
First	Creating a therapeutic relationship, explaining the subject and goals of the research and defining the variables in general, answering questionnaires and completing an informed consent form, formulating a session contract, explaining the metaphor of two mountains
Second	Initial valuation, explaining creative disappointment and the hungry tiger metaphor, introducing the past inefficient system
Third	Practicing mindfulness and conscious breathing, accepting problems rather than responding to problems, focusing on control as a useless strategy, desire to deal with difficult experiences, daily desire memories, behavioral activation to increase the likelihood of success
Fourth	Short-term and long-term success in deliberately controlling unpleasant emotions, determining the efficacy or inefficiency of behavior, comparing outer control with the inner world, explaining the metaphor of the liar and gel donuts, comparing pure discomfort with foul discomfort
Fifth	Introducing the fault of the fault and the verbal change, practicing your mind is not your friend, explaining the metaphor of travelers on the bus, using the letter against but, conscious breathing
Sixth	Self-conceptualized differentiation from the observer self, explaining the chessboard analogy, moving on to a worthwhile life with the observer, committing to action, practicing mental polarity
Seventh	Clarifying and specifying goals and values, distinguishing between reasoning and choosing for reasoning, result/process and metaphorical distinction of skiing, linking goals and values, explaining the magic wand metaphor
Eights	Self-compassion training and metaphors, self-attributes, self-compassionate writing, attention to values or near-misses, uninvited guests, explaining positive goals, providing review and summary

The SPWB is an answer-dependent self-report test. The questions are scored on a 6-point scale ranging from 1 to 6 (strongly disagree, somewhat disagree, disagree, agree, somewhat agree, and strongly agree). The results of the correlation between the 54-item SPWB with the Satisfaction with Life Scale (SWLS), the Oxford Happiness Questionnaire (OHQ), and the Rosenberg Self-Esteem Scale (RSES) approved the construct validity of the questionnaire (Ryff & Singer, 2008). Cronbach's alpha subscales of this questionnaire have been reported in the range of 79.0-85.0 (Peterson & Eifert, 2011).

Descriptive and inferential statistical methods were used for statistical analysis. Descriptive statistics were used to calculate frequencies, and determine central features and dispersion. In the relational statistics, the collected data were analyzed using descriptive statistics (mean and standard deviation). Regarding inferential statistics, the data were analyzed using univariate and multivariate analysis of covariance (MANCOVA) in SPSS software (version 22, IBM Corporation, Armonk, NY, USA).

## Results

The mean (standard deviation) of age in the

experimental group was 34.23 (6.22) years, and in the control group was 35.32 (7.14) years. Table 2 presents the mean (standard deviation) of optimism and psychological well-being by group and test.

The null hypothesis for the equality of variances of the two groups' scores in the research variables was confirmed; that is, the equality of the variances of scores was confirmed in the two experimental and control groups. The null hypothesis for the normal distribution of the scores of the two groups in the research variables was confirmed; that is, the normality of the distribution of scores in the pretest was confirmed in both experimental and control groups. The F value of interaction for the regression line slope was the same for all the variables of the study. In other words, the homogeneity of the slope of the regression line was accepted.

As shown in table 3, by controlling the pretest and significant levels of all tests, it was indicated that there was a significant difference between the experimental and control groups ( $P < 0.0001$ ;  $F 34.36$ ) at least in one of the dependent variables (psychological well-being and optimism).

The effect or difference was 44.0, i.e., 44%

**Table 2.** The mean and standard deviation of scores of the research variables in the pretest, posttest, and follow-up

Variable	Group	Post-test	Pre-test	Follow-up	
		Mean ± SD	Mean ± SD	Mean ± SD	
Optimism	Experimental	26.06 ± 4.35	35.73 ± 4.43	34.33 ± 3.79	
	Control	32.46 ± 4.95	33.86 ± 6.01	33.53 ± 4.85	
Psychological well-being	Positive relationships with others	Experimental	11.13 ± 1.12	13.66 ± 1.04	14.00 ± 1.00
		Control	10.66 ± 0.97	10.80 ± 1.01	11.00 ± 0.84
	Independence	Experimental	10.80 ± 0.67	13.00 ± 0.53	13.40 ± 0.63
		Control	11.00 ± 0.84	10.66 ± 1.04	11.06 ± 0.96
	Environmental mastery	Experimental	11.86 ± 0.74	14.93 ± 1.03	15.06 ± 0.88
		Control	12.26 ± 0.70	12.40 ± 0.91	12.53 ± 1.06
	Personal growth	Experimental	10.06 ± 0.70	13.13 ± 0.74	12.86 ± 0.91
		Control	10.00 ± 0.84	10.13 ± 1.12	10.46 ± 0.96
	Purposefulness in life	Experimental	10.40 ± 0.63	13.66 ± 0.89	13.80 ± 0.77
		Control	10.53 ± 0.51	10.66 ± 1.11	11.06 ± 1.09
	Self-acceptance	Experimental	11.46 ± 1.76	13.26 ± 1.62	13.93 ± 1.33
		Control	10.46 ± 1.35	10.93 ± 1.33	11.22 ± 1.14
	Psychological well-being	Experimental	65.73 ± 3.19	81.26 ± 2.89	82.13 ± 3.20
		Control	64.93 ± 2.37	65.60 ± 2.16	66.00 ± 2.10

SD: Standard deviation

of individual differences in posttest scores of psychological well-being and optimism were related to the impact of ACT (group membership).

As shown in table 4, by controlling the pretest, a significant difference was observed between the experimental group and control group in terms of optimism ( $P < 0.0001$ ;  $F = 43.81$ ), positive relationships with others ( $P < 0.0001$ ;  $F = 59.06$ ), independence ( $P < 0.0001$ ;  $F = 82.45$ ), environmental mastery ( $P < 0.0001$ ;  $F = 65.13$ ), personal growth ( $P < 0.0001$ ;  $F = 124.25$ ), purposefulness in life ( $P < 0.0001$ ;  $F = 1120.41$ ), self-acceptance ( $P < 0.0001$ ;  $F = 31.29$ ), and psychological well-being ( $P < 0.0001$ ;  $F = 723.26$ ). In other words, ACT increased the mean optimism score in the experimental group in comparison with the control group.

### Discussion

The results of this study were in line with that of the researches by Peterson and Eifert (2011),

Jamshidian QalehShahi, Aghaei, and Golparvar (2017), and Samadi and Doustkam (2014). ACT involves modifying cognitive processes to cope with and solve problems, moment by moment awareness of emotions (mind awareness), and unconditional acceptance of the problem (disorder). Thus, it helps people develop the cognitive skills they require.

Furthermore, clarification of the values and commitment to acting in the direction of these values allows infertile women to act in ways that can further reduce individual anxiety (Bricker, Bush, Zbikowski, Mercer, & Heffner, 2014). In the ACT, mindfulness, acceptance, and cognitive diffusion skills are used to increase psychological flexibility. Psychological flexibility is the increase in the ability of clients to relate to their present experience based on what is possible at the present moment. Evidently, in this way, they choose to act in the forms that are consistent with the chosen values (Ghasemi, Dehghan, Farnia, Tatari, & Alikhani, 2016).

**Table 3.** Results of multivariate analysis of covariance on the mean posttest scores of psychological well-being and optimism in the experimental and control groups with pretest

Test name	Value	df hypothesis	df error	F	P	Eta square	Statistical Power
Pillai's Trace test	0.98	8	21	34.36	0.0001	0.44	1.00
Wilks' lambda test	0.01	8	21	34.36	0.0001	0.44	1.00
Hotelling's Trace	65.29	8	21	34.36	0.0001	0.44	1.00
Roy's largest root	65.29	8	21	34.36	0.0001	0.44	1.00

df: degrees of freedom

**Table 4.** Results of one-way analysis of covariance in the experimental and control groups with pretest control

Variable	SS	df	Mean of squares	F	P	Eta square	Statistical power
Optimistic	270.43	1	270.43	43.81	0.0001	0.54	1.00
Positive relationship with others	49.90	1	49.90	59.06	0.0001	0.68	1.00
Independence	43.96	1	43.96	82.45	0.0001	0.75	1.00
Environmental mastery	52.76	1	52.76	65.13	0.0001	0.70	1.00
Personal growth	64.93	1	64.93	124.25	0.0001	0.82	1.00
Purposefulness in life	73.48	1	73.48	120.41	0.0001	0.81	1.00
Self-acceptance	15.31	1	15.31	29.31	0.0001	0.52	1.00
Psychological well-being	1760.34	1	1760.34	723.26	0.0001	0.96	1.00

SS: Sum of squares; df: degrees of freedom

In ACT, increased psychological flexibility is a mediator in improving psychological problems. Depressed patients, for example, usually seek to bring about depression, leading to increased rumination and criticism of their experiences. This therapy method is reinforced through mindfulness exercises, self-observation and body posture, and the modification of one's relationship with one's thoughts to increase the acceptance of thoughts, beliefs, feelings, and effort for sensory and physical perceptions (Galhardo, Cunha, Pinto-Gouveia, & Matos, 2013). It also appears that being aware of the present moment without using the lens of judgment will help infertile women to better convey their infertility and infertility history, which will lead to improved psychological optimism and well-being. This will ultimately improve pregnancy (Cunha, Galhardo, & Pinto-Gouveia, 2016).

Therefore, ACT will help individuals develop the skills needed to solve problems through cognitive-behavioral problem solving, instantaneous awareness of emotions (mindfulness), and unconditional acceptance of the problem (disorder). This treatment method decreases the amount of infertility stress that leads to physiological stress, pain, and physical discomfort by increasing the level of acceptance and reducing intellectual inhibition. Through the use of ACT, increased cognitive deficits, and informed acceptance helps infertile women experience new interactions and reduces negative thoughts. Infertile women learn to embrace situations and thoughts that they previously

avoided. Transparent communication values and commitment to acting in harmony with these values allow infertile women to act in a way that leads them to life satisfaction, communication, management of their individual life, reduced physiological anxiety, and improved psychological well-being.

ACT is based on a cognitive-behavioral and therapeutic approach that not only alleviates the negative emotional consequences of diseases and disorders, but also increases the level of psychological well-being of infertile women. In short, it seems that in this program and relating to their set of goals and value systems. As noted above, behavioral commitment exercises, fault-tolerance and acceptance techniques, and detailed discussions of values and goals all lead to increased optimism and improved psychological well-being in infertile women. Concerning the application of this program in future treatment and research, it is recommended that practitioners dealing with infertile women receive ACT and use its techniques of intellectual acceptance, cognitive impairment, and the pursuit of value-driven behaviors to reduce their suffering and improve their optimism and psychological well-being during pregnancy. Moreover, the issue of long-term follow-up and the stability of treatment and its effects on infertile women, as well as the comparison of this intervention with other psychological approaches in different groups of people with infertility should be considered in future studies. Furthermore, psychological

interventions enhance psychological optimism and well-being during pregnancy, especially for those with infertility, which may be a new perspective in therapeutic protocols in this field.

## Conclusion

It can be concluded that ACT, which includes intellectual acceptance, cognitive impairment, and pursuit of value-driven behaviors, can reduce the suffering of infertile women and improve psychological optimism and well-being among them. Thus, it can be used during pregnancy.

## Conflict of Interests

Authors have no conflict of interests.

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