

## The Effectiveness of Acceptance and Commitment Therapy on Stress and Depression in Adolescents Aged 14 to 18 Years with Stuttering: A Randomized Controlled Clinical Trial

Zahra Babaie<sup>1</sup>, Mohsen Saeidmanesh<sup>2</sup>

### Original Article

#### Abstract

**Introduction:** Stuttering is a communication disorder in the smooth and continuous flow of speech that occurs at different intensities. These disorders can have a negative impact on one's mental health. The purpose in this study is to determine the effectiveness of group therapy based on Acceptance and Commitment Therapy (ACT) on stress and depression in adolescents with stuttering aged 14 to 18 years.

**Materials and Methods:** The study was performed in a randomized controlled clinical trial design and the subjects were randomly divided into the two experimental and control groups after the pre-test. The intervention was performed in 8 sessions. In the two groups, stress and depression were measured by the Depression, and Anxiety and Stress Questionnaire (DASS-21) before and after the intervention. ANCOVA was used to analyze the data.

**Results:** The results showed that ACT significantly affected stress ( $P = 0.011$ ) and depression ( $P = 0.014$ ).

**Conclusion:** The results of this study showed that ACT treatment is effective in reducing stress and depression.

**Keywords:** Physiological stress; Depression; Acceptance and commitment therapy; Stuttering

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#### Introduction

Stuttering is a speech fluency disorder that is characterized by repetition, pause, or prolonged speech. These disorders can have negative effects on the mental health of individuals. The prevalence of stuttering in children aged 2 to 4 years is about 4% and in the general population is about 1% (1). In the Diagnostic and Statistical Manual of Mental Disorders-5th Edition (DSM-5), communication disorders include language disorders in which language, speech sound, and speech eloquence disorders begin in childhood. Language fluency disorder, which begins in childhood, is a new name for stuttering (2). Individuals react differently to emotional problems, constraints, environmental problems, mental and behavioral disorders, and even physical disabilities. Naturally, some individuals, especially people with speech disorders are more sensitive to these issues and these factors cause psycho-muscular disturbances and the development

of stress, anxiety, and exacerbation of speech disorders in them (3).

Nolen-Hoeksema et al. defined stress as the body's involuntary response to any pressure exerted to it (3). Stress is a state caused by pressure, not the pressure itself, but with a little negligence, it can be interpreted as the same as mental pressure and it can be regarded a state that humans express in the face of incompatible external stimuli (3). Depression is defined as "a depressed mood or a feeling of sadness and disinterest in any daily effort and pleasure" (2), which affects thinking, mood, emotions, behavior, and physical health (4). From an early age, adolescents with stuttering feel inadequate due to speech disorders and feel incapable of communicating with family members and peers (1). This gradually leads to stress and depression as well as poor concentration, start of communication with others, and spontaneous actions. Anxiety, stress, depression, and emotional-psychological pressure always intensify stuttering (1,5).

1- Department of Psychology, School of Human Sciences, Science and Arts University, Yazd, Iran

2- Assistant Professor, Department of Psychology, School of Human Sciences, Science and Arts University, Yazd, Iran

**Corresponding Author:** Zahra Babaie, Email: mitra.752001@yahoo.com

The goal of many treatment recommendations for stuttering is to reduce anxiety, stress, depression, and emotional stress, and to boost self-esteem (5). Different approaches have been proposed to the treatment of psychiatric disorders such as anxiety, stress, and depression, including drug therapies, cognitive-behavioral techniques, relaxation, inductive methods (hypnosis), classical psychoanalysis, pioneering psychotherapy, and group therapy (6).

Acceptance and commitment therapy (ACT) is one of the therapies that has recently become the focus of psychological researchers (7). In this treatment, first, the individual's psychological acceptance of the mental experiences (thoughts, feelings, etc.) increases and, in turn, ineffective control actions decrease. In this method, the patient is taught that any action to avoid or control these unwanted mental experiences is ineffective or has the opposite effect and aggravates them, and these experiences should be accepted completely without any internal or external reaction to eliminate them. The second step is to increase the individual's psychological awareness in the present moment; this means that he becomes aware of all his mental states, thoughts, and behavior in the present moment. Third, the individual is taught to separate himself from these mental experiences (cognitive separation), in a way that he can act independently of these experiences. Fourth, it is an attempt to reduce the excessive focus on self-imagination (such as victimhood) that the individual has created in his mind. The fifth step is helping the individual to clearly identify his or her core personal values and turn them into specific behavioral goals (clarifying values). The final step is to create motivation to committed action; this means that the activity is focused on specific goals and values along with the acceptance of mental experiences that can be depressing, obsessive, stressful, fears or social anxiety, etc. (8).

Recent studies on ACT and its satisfactory results are indicative of the effectiveness of the application of ACT in clinical trials and especially in working with patients. Various studies have suggested ACT as an appropriate treatment to reduce anxiety (5), anxiety and depression (8), mood disorders (9), obsessive-compulsive disorder (6), and panic (10). While empirical evidence is growing about the effect of this treatment on a variety of disorders, very few studies have examined this treatment in subjects with stuttering. For example, Saeidmanesh and Nejad Akbari Ravavri in their study examined the effect of speech therapy with ACT stress management method on reducing the severity of stuttering in adolescent girls and found that speech therapy and ACT stress

management can improve stuttering in adolescents (11). The results of a study carried out by Beilby et al., which was conducted aiming to investigate ACT on the psychological adjustment of speech in adults with stuttering, showed that the ACT method could be applied as an effective intervention in psychological function, readiness for change and treatment, use of mindfulness skills and, in general, fluency. These findings increase the understanding of the effect of stuttering on psychological well-being and suggest a new perspective on what may lead to a successful stuttering treatment (12). Additionally, Forman and Herbert suggested the effectiveness of ACT and cognitive therapy on anxiety and depression, anxiety, stress, functional problems, quality of life (QOL), life satisfaction and, in general, clinical performance (13). In their study by examining the inappropriate thoughts and beliefs of adults with stuttering and its relationship with anxiety and depression, Farpour et al. concluded that there was a significant relationship between misconceptions and misbeliefs, which are observed to varying degrees in all people with stuttering, and anxiety and depression (14).

Due to the importance of the adolescence period, therapies have been considered to improve stress and depression in adolescents. On the other hand, due to the lack of research background on the effect of ACT method on adolescents with stuttering, the present study is conducted with the objective to investigate the effectiveness of ACT on stress and depression in adolescents with stuttering.

### Materials and Methods

This study was a randomized clinical trial with pretest, posttest, and control group. Thus, ACT was considered as an independent variable and stress and depression were considered as dependent variables. The therapeutic intervention (ACT method) was performed for the experimental group. The study population consisted of all adolescents with stuttering aged 14 to 18 years who referred to the rehabilitation clinic in Mobarakeh, Iran. Due to the limitations of the statistical population, the samples were selected using the convenience sampling method. Information on the type of treatment, how they attended the sessions, and the number and timing of the sessions were provided to the adolescents and their parents. Confidentiality was described as a fundamental principle of treatment to the participants, and finally, the subjects who expressed their consent to participate in the groups entered the study. The code of ethics in research was received from the University of Science and Arts of Yazd, Yazd, Iran and finally, 20 adolescents with stuttering were randomly divided into the two groups of

experimental and control each as 10 subjects.

The study inclusion criteria included diagnosis of stuttering disorder by the clinic speech therapists, ages 14 to 18, parental consent for their adolescent's participation in the study, adolescents' consent to participate in the study, and lack of concurrent treatment. Failure to attend the treatment sessions regularly, not doing homework, and not completing the questionnaires in the pre-test and post-test stages were considered as the exclusion criteria.z

In the present study, the ACT method was applied in the treatment guide proposed in the study by Hayes et al. (7). Eight sessions (each session lasting 1.5 hours) were performed in groups once a week. Data collection and analysis were performed by a Master of Clinical Psychology AND PhD in Neuroscience. A summary of the contents of the ACT treatment plan is presented in table 1.

The Depression, Anxiety and Stress Scale-21 (DASS-21) was employed to assess anxiety in the adolescents. This scale has been designed to measure the psychological constructs of depression, anxiety, and stress and consists of three subscales (7 items each) that are scored from 0 (does not apply to me) to

3 (completely applies to me).

An important application of DASS-21 is to measure the severity of the main symptoms of anxiety, depression, and stress. The results of calculating the correlation between the factors of the questionnaire in the study by Antony et al. showed a correlation coefficient of 0.48, 0.53, and 0.28 for depression, anxiety, and stress, respectively (15). The validity and reliability of this tool in Iran have been investigated and confirmed by Samani Joukar (16). Given the findings of a study accomplished by Henry and Crawford, which was performed to examine the psychometric properties of DASS-21 on a non-clinical English population (n = 1794), the internal consistency (IC) coefficients (Cronbach's alpha) of the whole scale and its three subscales of depression, anxiety, and stress were reported as 0.93, 0.88, 0.82, and 0.90, respectively (17). Therefore, the validity and reliability of this test were confirmed and the results of the confirmatory factor analysis (CFA) also confirmed the presence of the anxiety factor (18).

Data were analyzed using the analysis of covariance (ANCOVA) test in SPSS software (version 16.0, SPSS Inc., Chicago, IL, USA).

**Table 1.** Acceptance and commitment therapy (ACT) treatment plan

Session	Topic	Outline
First	Treatment introduction	Getting acquainted with the group members and establishing a therapeutic relationship, determining the rules governing the treatment sessions and discussing confidentiality, clarifying the relationship therapy, introducing and measuring anxiety and self-esteem, describing the treatment method, asked the adolescents to leave the session, initiation of creative helplessness in parents using metaphor, rope-pulling with monsters, review of control strategies, behaviors, and needs of parents using island metaphor
Second	Creative helplessness	Getting feedback of the previous session from the parents and investigating the island behavior of parents, asking the parents to leave the session and ask the adolescents to enter the session, open conversation with the adolescents, clarifying values using mountaineering metaphor, creative helplessness, the hungry tiger metaphor and the hole metaphor, presentation of homework
Third	Controlling the problem	Reviewing assignments and receiving feedback from the previous session, introducing control as a problem, discussing the inner world and its difference with the outer world, metaphor of the polygraph, presenting the task
Fourth	Accepting alternatives to accept avoidance	Reviewing assignments and receiving feedback from the previous session, introducing, accepting and willingness as alternatives to control, the guest metaphor, expressing pure and impure feelings, presenting assignments
Fifth	split	Checking the assignments and receiving feedback from the previous session, getting acquainted with the hidden features of the language that cause confusion, expressing the splitting and the metaphor of the bus, presenting the assignment
Sixth	Being as a background and in the present	Reviewing assignments and receiving feedback from the previous session, introducing types of oneself, chess metaphor, familiarity with the conceptualized past and future (metaphor of bus driver), presenting homework
Seventh	Values	Checking assignments and receiving feedback from the previous session, moving towards a valuable life with a receptive and observant identity, identifying values of references, measuring values of references, presenting assignments
Eighth	Commitment	Checking assignments and receiving feedback from the previous session, commitment to actions and values despite obstacles, metaphor of seedlings, evaluation of commitment to actions, presentation of permanent task, completion of post-test

## Results

The current study was carried out with the aim to investigate the effect of the ACT method on stress and depression in adolescents with stuttering. The study had no sample drop. The demographic characteristics of the participants by groups are presented in table 2.

**Table 2.** Demographic characteristics of the subjects

Variable	Group		Total
	Experimental	Control	
Age (years)			
14	4 (40)	3 (30)	7 (35)
15	2 (20)	4 (40)	6 (30)
16	3 (30)	1 (10)	4 (20)
18	1 (10)	2 (20)	3 (15)
Gender			
Girl	5 (50)	4 (40)	10 (50)
Boy	5 (50)	6 (60)	10 (50)
Last educational degree			
Tenth	5 (50)	5 (50)	10 (50)
Eleventh	4 (40)	3 (30)	7 (35)
Twelfth	1 (10)	2 (20)	3 (15)
Number of children in the family			
One	2 (20)	0 (0)	2 (10)
Two	3 (30)	4 (40)	7 (35)
Three	5 (50)	6 (60)	11 (55)
Number of children with stuttering in the family			
One	1 (10)	1 (10)	2 (10)
Mother's literacy level			
Below diploma	6 (60)	8 (80)	14 (70)
Above diploma	4 (40)	2 (20)	6 (30)
Father's literacy level			
Below diploma	7 (70)	6 (60)	13 (65)
Above diploma	3 (30)	4 (40)	7 (35)

Data were reported as n (%).

In accordance with the data presented in table 2, the gender percentage of the subjects was the same in the experimental group, but in the control group, boys were 10% more than girls. The number of children with stuttering in the subjects' families was one in both groups. Age and education did not have the same distribution, and in both groups a higher rate of parents had a lower than diploma level of education, moreover, 55% of the participants were the third child.

It should be noted that before performing the ANCOVA test, the relevant hypotheses were assessed. One of the hypotheses was the homogeneity of variances that was checked using Levene's test of sphericity. In this regard, for the stress and depression variables,  $F = 0.072$  and  $P \leq 0.779$  and  $F = 0.050$  and  $P \leq 0.605$ , respectively, indicating that the assumption of homogeneity of variances was true.

The results of mean scores of stress and depression in the experimental and control groups along with the ANCOVA test results are given in table 3.

Based on the findings reported in table 3, the results of the ANCOVA test of the ACT method on the stress and depression level by controlling the pre-test stress and depression scores in both experimental and control groups revealed that by eliminating the effect of pre-test on the dependent variable, the adjusted mean scores of stress and depression in the posttest stage were obtained as respectively  $F = 50.818$  and  $P \leq 0.011$  and  $F = 52.633$  and  $P \leq 0.014$  and there was a significant relationship between the experimental and control groups. Therefore, the ACT therapy was effective in reducing stress and depression in the adolescents with stuttering.

## Discussion

The aim of this study was to evaluate the effectiveness of the ACT method on stress and depression in adolescents with stuttering. The findings demonstrated that in order to control the stuttering-related psychological disorders, this method can be effective in reducing depression and stress in adolescents with stuttering compared to the control group who did not receive the treatment. Saeidmanesh and Nejad Akbari Ravavri conducted a study to investigate the effect of stress on stuttering intensity (11) which was consistent with the results of the present study. Moreover, Farpour et al. in their study showed that there was a significant relationship between misconceptions and misbeliefs, which are observed to varying degrees in all people with stuttering, symptoms of anxiety and depression (14).

**Table 3.** Descriptive data of experimental and control groups on stress and depression variables with ANCOVA test results (n = 10)

Variable	Group	Pre-test	Post test	Post-test comparison	
				F	P value
Stress	Experimental	26.02 ± 4.2	16.3 ± 1.5	50.818	0.011
	Control	26.5 ± 6.1	26.0 ± 6.1		
Depression	Experimental	20.0 ± 2.8	13.5 ± 6.1	52.633	0.014
	Control	19.0 ± 3.2	19.0 ± 1.4		

Data were reported as mean ± standard deviation (SD).

Rajabi and Yazdkhasti concluded that the ACT method was effective in anxiety and depression in women with multiple sclerosis (MS) (8). In a study, Zemestani et al. found that ACT treatment had a significant effect on reducing anxiety and depression in mothers with children with attention deficit hyperactivity disorder (ADHD) (19).

Using the ACT method, the psychological acceptance of mental experiences (misbeliefs and misconceptions) of the adolescents with stuttering of social interactions due to stuttering, reduces stress and this is an effective step to promote the mental health of these people. Explaining the results of the present study, it can be said that in the ACT method, instead of emphasizing exposure, the emphasis is on increasing the individual's desire to experience internal events as they are. This approach helps the person to experience anxious and stressful thoughts only as a misconception. Additionally, instead of responding to these thoughts, the individual learns to do something that is important to him in life and in line with his values (5). In this approach, the person gradually learns that the existence of stressful thinking is not a problem in itself, rather the main problem is the person's attempt to respond to stressful thinking. At this point, by substituting what is important to them as the background, participants are able to easily experience unpleasant internal events in the present and to separate themselves from unpleasant reactions, memories, and thoughts. In fact, the central processes of the ACT method teach the individual how to learn deterrence in thinking and to get rid of annoying thoughts through acceptance and commitment. Furthermore, instead of conceptualizing self, the individual strengthens the observer himself and accept internal events instead of controlling them, clarify his values, and address them. By observing these points, stress is reduced in the person (20).

In general, it can be claimed that the reason for this effect is the change in the clients' attitudes toward the cause of irrational thoughts, the negative and defective cycle of these thoughts and the goal of treatment, starting awareness-based exercises, and creating creative helplessness relative to past solutions from the first sessions. In fact, in this method, accepting and increasing attention and acting on values acts as a mediator of change in the treatment of depression and stress (21). In other words, it can be said that the ACT method creates therapeutic changes by creating and developing acceptance and increasing the practice of values in clients (20). In this treatment, behavioral commitment exercises along with faulting and acceptance techniques as well as the issues of values and goals and the need to correct values, all led to a reduction in the severity of depression and stress in

adolescents with stuttering.

The ACT method helps adolescents with stuttering not to consider themselves as incorporated with the thoughts and feelings that come with stuttering, a process that is facilitated by the observer practice and helps the individual to be merely an outside observer separate from his or her body, thoughts, and emotions. Therefore, this exercise facilitates acceptance apart from stuttering.

### Limitations

Among the limitations of the present study were the convenience sampling method, the limitation of the sample to a clinic, and the lack of a follow-up period.

### Recommendations

It is suggested that appropriate longitudinal studies be conducted to investigate the long-term effects of the results obtained in the present study.

### Conclusion

The results of the present study indicated that the ACT method had a significant effect on the improvement of depressive symptoms and stress in adolescents with stuttering and showed its effect on all 10 adolescents, thus its application can be effective. Therefore, combining or using the ACT therapy in treatment programs for subjects with stuttering is recommended.

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### Authors' Contribution

Zahra Babaie: Study design and ideation, study support, executive, and scientific services, providing study equipment and samples, data collection, specialized statistical services, manuscript preparation, analysis and interpretation of results, specialized evaluation of manuscript in terms of scientific concepts, final manuscript approval for submission to the journal office, the responsibility of maintaining the

integrity of the study process from the beginning to the publication, and responding to the referees' comments; Mohsen Saeidmanesh: Study design and ideation, study support, executive, and scientific services, providing study equipment and samples, data collection, specialized statistical services, manuscript preparation, analysis and interpretation of results, specialized evaluation of manuscript in terms of scientific concepts, final manuscript approval for submission to the journal office, the responsibility of maintaining the integrity of the study process from the beginning to the publication, and responding to the referees' comments.

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The authors declare no conflict of interest. Zahra Babaie funded the basic study related to this study and has been studying at the University of Science and Arts of Yazd since 2015 as a graduate student. Dr. Mohsen Saeidmanesh was the study supervisor who has been working as an assistant professor and dean of Ashkzar School, University of Science and Arts of Yazd since 2011.

### Conflict of Interest

The authors declare no conflicts of interest.

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