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THE EFFECTIVENESS OF ACCEPTANCE AND COMMITMENT THERAPY (ACT) IN PSYCHOSOCIAL FLEXIBILITY, EMOTION REGULATION, AND PSYCHOLOGICAL ADJUSTMENT IN PEOPLE WITH STUTTERING

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ABSTRACT

Stuttering is a controversial, multifaceted, psychomotor speech disorder occuring in the natural course of a person's speech, coupled with behavioral, cognitive, and attitudinal changes. The purpose of the study was to examine the effectiveness of ACT on psychological flexibility, emotion regulation, and psychological adjustment in stutterers. In doing so, from among the people admitted to speech therapy center, 30 people were selected by convenient sampling and randomly divided into experimental and control groups. Both groups were examined in terms of discomfort and improper speech before and after participating in training sessions and 6 months later. The experimental group participated in 12 sessions of ACT, but the control group received no training. Data were analyzed using covariance analysis using SPSS-22. The results of covariance analysis showed that ACT is effective in improving the speech performance of patients with stuttering. Hence, using this method; one can help reduce development of distress and improper and unclear speech of these patients.

Keywords: ACT, flexibility, emotion regulation (ER), psychological adjustment

INTRODUCTION

Language is considered as the cognitive high-levels functions of the brain, and the speech is the literal and audible expression of language. Speech or language alone or together may be damaged due to varying degrees and various reasons, and disrupt the main human communication pathway. One of the most common abnormalities is stuttering (Kotbai, Musa, El Sadi and Nabi, 2015). Stuttering is one of the most controversial diseases that often happening in childhood due to various causes. The wide range of stuttering has continued from childhood to adulthood and is a chronic

mental disorder with a variety of related conducts. According to different viewpoints of therapists, treating stuttering is very variable in all stages of childhood, adolescence and adulthood. For example, Webster's bifunctional model (1997) suggests that stuttering comes from two factors: 1) Supplementary Motor Area (SMA) of the left hemisphere for speech control and sequencing of movements, and 2) intervention and neural activities of the right hemisphere, such as fear, anxiety, avoidance, negative emotions, and so on. According to this view, successful treatment of stuttering depends on both factors. Hence, for the first factor, there is a mental speech development approach (speech enhancement) and a type of top-down activity; and for a second factor, a cognitive approach and a low activity of bottom-up type is used. The effectiveness of stuttering treatments in adulthood will be different based on the stability of stuttering, attitude, individual negativity, motivation and passion, the type of treatment and its implementation and other factors will be different. Nonetheless, any stutterer with any kind of clinical sign besides general methods needs unique therapeutic approaches. Additionally, in designing stuttering treatment programs for adults, besides age, other factors including stuttering, hidden aspects of stuttering, social anxiety, avoidance, cognitive attitudes, personality differences, individual experiences, history of treatment, individual motivation and different goals should be taken into account (Ward, 2006). According to Stein and Walker (1996, 2002), Onsslo and Peckman (2004), and Craig and Tran (2009) about 50% of stutterers suffer from mental health disorders, including social anxiety disorder. Thus, they choose silence in interactive and social situations and typically have a negative attitude towards their speech, which besides intensification of stuttering also has an adverse effect on the quality of their lives (Evorach, Obrien, Jones, Block et al., 2009). Studies have shown that the role of people's beliefs in the disease and changing their beliefs and perceptions can lead to a better life and more adaptation. Among the third wave psychological approaches, ACT has a good ability to control one's attitudes and perceptions of the stressful life outbreak. Studies have shown that ACT has proven successful in various areas such as stuttering (Canther, Barch and Ginwer, 2006); psychosis (Bach and Heyz, 2002), drug abuse (Gilford, Kellenberg, 2008), jobburnout (Bond and Bunch, 2002) and pain relief and stutter (Helmer and Tylston, 2005). The basic structure and concept of psychological literacy is created by avoiding experiences, cognitive fusion and failure to meet behavioral needs and lack of alignment

with fundamental values. The goal of the therapist is not to reduce symptoms, but something that, as a side effect in the therapeutic process, changes the relationship between thoughts and problematic feelings to reach people, who do not understand the symptoms as a symptom, and even learn that they recognize them harmless, even if they are uncomfortable and unpleasant (Hayes, 2016).It is accepting something beyond the control of the stutterer. Hayes, Loma, Boone and Masuda believe that the main message is that they are committed to doing everything in control of the individual (Hayes, Loma, Bond, Masood and Lilly, 2013). In this approach, treatment is shaped by accepting cognitive non-fusion, itself as a background, is the relationship of conscious attention to the present, values, and commitment to action, which is, because of this fundamental concept, the flexibility of a textual approach that we will reach with psychological activeness. In fact, the clients are challenged to accept their thoughts and feelings and commit themselves to the necessary changes. Hayes believes that ACT is the changes in internal and external verbal behaviors (Hayes, 2008). According to the theory of cognitive flexibility, mental health means accepting the inner and outer environments of the individual and committing to activities invaluable in terms of stability. Different forms of psychological harms are described according to cognitive flexibility by excess in rules behavioral or maladaptive emotions, or by value-based behaviors and probability sensitivities that relate to the future (Masuda and Tali, 2012). Cognitive flexibility can adjust the person's thinking and behavior in response to changes in environmental conditions (Dickinstein, Nelson, McClure et al., 2015). Accordingly, there is evidence suggesting that cognitive flexibility is correlated to psychological well-being and vulnerability in a wide range of discomfort that involves depression, anxiety, and general psychiatric illness (Masooda & Tali, 2012).

As stutterers, using though ruminations slip into their inner world and strengthen their stutter, those who do not have cognitive flexibility tend towards rumination when they feel sad because they can hardly find ways of coping such sentiments (Davis and Nullen Hoeksma, 2013). In this regard, Zong, Gua, Gua, and Xi, Wang et al. (2010) found that the students with stuttering syndrome experienced many negative events compared to other students - these students perceived stressful events uncontrollable. Some studies such as Sarapas suggest that thought and behavior are created when a person does something and realizes that this has been in line with his own goals (Lazaroos, 1991). However, the individual's ability to control his

emotion is one of the most important features that should be learned. Emotion adjustment is defined as the process of initiating, maintaining, modifying, or changing the incidence and intensity or continuity of the inner feeling and the emotions associated with physical, psychological, and social processes in accomplishing the goals of the individual (Vimeez and Peena, 2015). In fact, emotional adjustment (EA) is not just suppressing emotions, but it should not always be in a state of tranquility and a state of emotional arousal; instead, emotional regulation consists of monitoring and changing the emotional experiences of a person (Thomsoon, 1994). The emotions are of high quality such that they can cause a positive or negative reaction in individuals, if they are in accordance with the situation and conditions, because a positive reaction. Otherwise, they will cause a negative reaction. Thus, when the emotions turninto intense or prolong case, or not compatible with the conditions, we need to adjust them. Vedictin and Nelson, McCheer, Grimmie *et al*. (2013) examined the relationship between cognitive flexibility and stuttering, and found a relationship between the severity of stuttering and cognitive flexibility, cognitive defects in attention, processing speed, and long-term verbal memory (Gross, 1998). Obviously, the process of adaptation to a chronic disease, such as stroke, is a process constantly subjected to individual and environmental stimuli and by increasing the degree of compatibility, the patient in various dimensions (physiological and psychological) can achieve more favorable self-control of the disease (Leififer, 2007). It is argued that achieving health in diseases can be atained by applying the adaptive model in all dimensions of adjustment (physiological dimension and psychological dimensions of self-perception, role play, and dependence independence) (Searcheus, 2010). This is because in this model, the patient was evaluated accurately and during the press actions eradicating and manipulating the triggers of the inappropriate behaviors, the consistent behaviors are increased and thus the patient achieves better physiological and psychological adjustment (Borens, 2016). An education program based on Roy adaptation model provides a framework for nursing thinking in examining the different situations of patient can provide the nurse with the ability to analyze the situation better, organize his thinking and take the best decision to take care of his patient. Moreover, it is anticipated that using a care program based on Roy model, good behaviors increase in the patient and eventually the complications of the disease reduce (Bidi, 2012). Thus, the adaptation process after stroke needs psychological

interventions to reduce the abilities and changes in life and manage stress and adapt to new changes in life. In this program, support groups, including families, friends and support groups, should be taken into consideration by affected people (Beiroch, 2013). Thus, the aim of this study was to examine the efficacy of ACT on mental flexibility, EA and mental function in people with stuttering.

METHODS

This study was quasi-experimental with pre-test, post-test and follow-up with the control group. The population of the study was all patients with stuttering who were admitted to speech therapy centers in Ahwaz in2017-2018, who had been diagnosed by specialists, psychiatrists and other relevant specialists. The sample size was estimated using the statistical power, alpha level of 0.05, effect size 0.08, and previous studies. Individuals with definite stutter diagnosis were selected and then, based on inclusion criteria and conducting a pre-test session with a clinical interview conducted by a psychiatrist-researcher based on the DSM_IV_TR diagnostic criteria. Thirty subjects (15 for each group) obtained the highest scores (as the baseline) after completing the questionnaires by simple random sampling method and were randomly assigned to two experimental groups (15 subjects and 15 controls). The inclusion criteria were the patient's willingness to participate, having at least reading and writing skills, receiving a definitive stutter diagnosis for at least 6 months by relevant specialists. They were also lack of psychotherapy and medication before entering the research, at least 20 years of age, lack of physical illnesses or severe psychiatric disorders, non-occurrence of any other debilitating and chronic illness like kidney, liver, cardiovascular diseases, and completing the consent form by the subject. Exclusion criteria were subjects' refraining from continuing the study and using drugs during the study. In this study, adaptability, flexibility, EA and ACT questionnaire and half blind communicative cognitive test questionnaire were used.

Table 1: The content of the sessions is as follows:

	Summary of the sessions
First session	**Establishing a sincere relationship with the therapist and getting their own comments, explaining the difference between the world inside and outside and doing the related exercises in the clinic and at home**
Second session	**Initial measurement of values with magic wood metaphor and planning to move towards values and provide homework for attention to the outside world**
Third session	**Conscious breathing exercises, examining the internal and external barriers to the values and metaphors of bus passengers, Home exercise for identifying the internal and external barriers in the next week and double the practice of conscious breathing daily during the week**
Fourth Session	**Reviewing the practice of the past session and showing that internal barriers have a lot of power in dispensing us from our values and the metaphor of the climate to remove the focus from what we cannot control. Homeworkas conscious awareness of the times when we want to control a feeling or thought**

	or event not in our direct control
Fifth meeting	**Examining the practice of the past session and the return to metropolitan bus passengers, the metaphor of the fallen person in the well and the practice of the home as identifying the times when you are busy in the well**
Sixth session	**Examining past session exercises, exercising eating snacks consciously and practicing if your thoughts were a movie,providing homework designation on the thoughts and notes in your worksheet, and at least two meals a weekconsciously**
Seventh session	**Examining the last session practice, thinking suppressing practice, and practicing watching thoughts Assigning homework by identifying bus passengers and paying attention to the fact that the bus is in your hands or the hands of passengers and notes when bus passengers are being controlled**
Eighth session	**Feedback from past sessions, attention to physical senses, thoughts and roommate metaphors Openness exercise and acceptance for home**
Ninth session	**Examining the past session exercise and exercise space Changes in grammar strategies and reassess movement towards values and looking at the internal and external barriers**
Tenth session	**Practicing awareness of the surroundings, thoughts and physical excitement,practicing moving with closed eyes on the straight line and the wandering contest with monsters Homework ofidentifying the times you are fighting monsters and drop ropes and notes in a special worksheet**
Eleventh session	**Examining past session exercises, mental wildlife metaphor, and a looking without judging thoughts and feelings**
Twelfth session	**Concluding past sessions and preparing a cure for the end of treatment**

Adjustment questionnaire: Bell Adjustment Inventory has emotional adjustment, social adjustment, home adjustment, and fitness adjustment with 32 questions. The samples responded to the questions as "yes and no" and if the answer was correct one and if wrong zero was given. Thus, the range of scores for each subscale was from 0 to 32. The less score people receive in Bell adjustment test, the more consistent they are and vice versa. According to the scoring of the questionnaire table, the compatibility was classified as good, moderate and poor. Moreover, the demographic characteristics of the samples were separately recorded. The questionnaire was a standard questionnaire whose validity and reliability are obtained for Iran. Ghasemi reported the reliability coefficient of it as 0.98 by split-half test (Ghasemi, 2010).

Flexibility questionnaire: This questionnaire was developed by Bond *et al.* (AAQII): Acceptance and Action Questionnaire (AAQ-II), (Bond *et al.*, 2011) for experiential/psychosocial assessment, especially in relation to experiential avoidance and tendency to conflict in practice with seven emotions questions. Questions of this questionnaire examine the lack of tendency and unwillingness to experience the unwanted thoughts and feelings (the inability to stay in time and move towards inner values) and my painful memories, which deprive me from having a satisfying life. The questions of this questionnaire are ranked according to the agreement on a 7-option Likert scale

(never =1, very rarely = 2, rarely = 3, sometimes = 4, usually = 5, almost always = 6 and always = 7). Higher scores on this scale indicate lower psychological flexibility and higher empirical avoidance.

ER Questionnaire: ER Questionnaire was developed to measure the emotion regulation strategies by Grass & John. The questionnaire has two re-evaluation sub-scales, six items and four repression items. The participants responded in a 7-option Likert scale from strongly disagree (with a score of 1) to strongly agree (with a score of 7). In Grassand John's study, its re-evaluation correlation was 0.79. In Iran, Hosseini has reported its alpha Cronbach's of 0.79 for re-evaluation (Bigdeli *et al*., 2013).

Wright-Ayer Stuttering Self-Rating Profile (WASSP): WASSP test is a standardized and referential-based test used to measure stutter abnormalities, as well as the frequency of stuttering. For investigating the cognitive and emotional variables of stuttering of adults 91 years and above, and sometimes for people 94 up to 91 years of age (Wright and Ayre, 1997). Its questionnaire has 94 items plus 9 optional sentences that examines the speaker's perception of a 6-option Likert scale to answer each sentence of the test (9), meaning "no" and "6"meaning "very intense." This test consists of five sub-scales of nine internal validity scales, all of which are obvious, hidden and social stuttering. Basically, one of the items of these tests consists of stuttering sentences and 97 other emotional and cognitive statements. The results of WASSP are considered as the base for thinking, beliefs, and cognition of stuttering. Administration of WASSP test takes a little time (about 5 minutes) (Trevor, 2012). The reason for selecting this test from among other attitudinal and cognitive tests for this study was because it covered all aspects of the cognitive, emotional, attitudinal and social aspects of the patient, along with the characteristics of stuttering behavior (including all stuttering patterns like repetition, stuck, elongation of speech, latency, and other cases), and besides quantification, it is easy to implement. The latest version of the test was received through correspondence with the test constructor and translated into Farsi.

The study of translatability and its content validity and face validity were done in two phases by speech and language pathologists (94 people). By applying the comments and suggestions of the pathologists and professors, the final version of the test was prepared and used. Moreover, the reliability of this test was performed by 94 stutterers in a multi-stage 93-day interval between the first and second (and 03-day) intervals between the second and third times, and the

reliability coefficient was estimated and used in the study.

RESULTS

The demographic data of the subjects showed that the mean and standard deviation of the age in the experimental group was 0.91 and 42.12, and in the experimental group 1.41 and 40 years. Descriptive results related to the pre-test, post-test and follow-up scores of the research variables in the two intervention and control groups are shown in Table 2. The results of the review of statistical presumptions showed that both the prerequisite for the equation of variances (using Levenes Test) and normality (using Shapiro-Wilk Test) (p=0.05), so using Multivariate Covariance Analysis was possible. The results showed a significant difference between the final adjusted mean of stutter scores of the experimental group in both post-test (p = 3.90) and pre-test (p = 1.25) (p<0.05).

The hypothesis was that ACT, ER and psychological adjustment affect stuttering of the people with stuttering. Hence, ACT affected the reduction of the stutter score in psychological adjustment of the experimental group was affected by post-test and control. The effect of this experiment on stutter in the post-test and pre-test phase's was0.66 and 0.38, respectively. Moreover, the effects of this intervention on the emotion at the post-test and pre-test were 0.34 and 0.39. The results of covariance analysis and the effect of group membership on psychological adjustment, flexibility, and ER in the intervention group in the post-test and pre-test stages are considered separately in Table 3.

Table 2: Mean and standard deviation of pre-test and post-test and control by groups

Variable	N	pre-test Mean and standard deviation	post-test Mean and standard deviation	Control Mean and standard deviation
people with stuttering				
experimental	**15**	**13.88+3.25**	**10.33+2.39**	**11+2.95**
control	**15**	**13.25+2.91**	**14.63+4.13**	**13.62+3.67**
Acceptance and Commitment Therapy (ACT)				
experimental	**15**	**15.88+2.66**	**12.66+2.06**	**11.44+2.87**
control	**15**	**14.12+1.35**	**15.12+2.74**	**14/87+3.52**
psychosocial flexibility				
experimental	**15**	**43.77+6.18**	**34.33+4.45**	**33.22+15.11**
control	**15**	**41.25+6.13**	**45.50+8.45**	**43.37+5.44**
emotion regulation				
experimental	**15**	**37.22+14.41**	**3.60+1.58**	**87.44+15.62**
control	**15**	**35.50+14.05**	**90.88+5.33**	**35.87+13.33**
psychological adjustment				
experimental	**15**	**7.66+1.58**	**4.88+1.05**	**5.22+1.09**
control	**15**	**7+1.92**	**7+1.60**	**7.50+1.55**

Table 3: The results of the significant multivariate analysis of variance on the overall score of the variables of psychological adjustment, ER, and flexibility in the experimental and control group

Variable	Average squares	F	p-value	Impact factor	P-S
psychological adjustment			0.01		
experimental	0.34	16.36		0.662	0.935
control	36.69	37.33		0.387	0.790
psychosocial flexibility			0.01		
experimental	0.039	27.45		0.345	0.509
control	36.80	45.85		0.395	0.604
emotion regulation			0.01		
experimental	32.80	3.90		0.689	0.920
control	7.15	1.25		0.625	0.885

Table 4: The results of the multivariate analysis of variables analysis on the Mean of research Variables

	Test name	Value	F	Df of hypothesis	Df of error	*P*	Eta square
Model	Pillais Trace	291%	10.406	3.000	76000	0.00	0.291
	Lambda Wilkes	709%	10.406	3.000	76000	0.00	0.291
	Hoteling effect	411%	10.406	3.000	76000	0.00	0.291
	The biggest root of the error	411%	10.406	3.000	76000	0.00	0.291
Group	Pillais Trace	110%	10.406	3.000	76000	0.00	0.110
	Lambda Wilkes	890%	10.406	3.000	76000	0.00	0.110
	Hoteling effect	124%	10.406	3.000	76000	0.00	0.110
	The biggest root of the error	124%	10.406	3.0000	76000	0.00	0.110

DISCUSSION AND CONCLUSION

The results showed that ACT group therapy has led to improved and decreased stuttering and the overall score of the instrument, increasing acceptance and reducing stuttering. The results of this study are in line with the results of previous studies, including: (McKrakin *et al*., 2007). In a study, McKrakin *et al*. examined the results of underlying ACT and the obligation implemented simultaneously for people with stuttering with high and less disability. The results of treatment for patients with high disability showed significant improvement after treatment in several variables, including stuttering stress, disability, depression, anxiety related to stuttering, daily rest and function (In an activity-tolerance test). The calculation of the effect size shows the effectiveness of the treatment for psychological adjustment, flexibility, and ER. The analysis of stable changes reflected the stability of statistical and clinical changes in the follow-up of the three months. So far, modest research support for the use of any type of psychotherapy in the treatment and reduction of psychological disorders and stuttering in people with stuttering problems were present (McKrakin, 2007). Moreover, the results of the research by Deine Dou et al.showed that patients with migraine and stuttering of the intervention

group receiving ACT in the follow up in the control was significantly higher that related to three variables of flexibility and excitement and psychosocial compatibility (Deine Dou, 2012).

In explaining the quality of the effect of ACT on psychological symptoms in stuttering patients may be due to the effect of this, the change in the attitude of clients in the first session due to the creation of irrational thoughts, negative and defective cycles, and these inaudible thoughts and speeches.At the first meeting, due to irrational thoughts, negative and defective cycles, and these inaudible thoughts and speeches, the purpose of treatment, the beginning of awareness-based exercises, and the creation of helpless speech in relation to past solutions, from the first sessions and welcomed patients from. According to the results, as "acceptance" increased before the significant decrease in psychiatric symptoms, on can conclude that the acceptance variable and increase in the attention and practice of values in the treatment of stuttering by admission and commitment therapy acts as a mediator. In other words, one can state that ACT creates therapeutic changes through the creation and development of "acceptance" and "increasing the value of actions" in the clients (Amiriken, 2013). The other result of the present study showed that group therapy through acceptance and commitment increased the acceptance of stuttering and increased flexibility adaptability in people with stuttering. This finding is consistent with the results of the study by Baruffon etal. (1998). They investigated the role of pain acceptance as a process of stuttering in disaster thought and severity of pain in patients. In this study, 186 stuttering patients participated in a three-week stomach-based stomach treatment. The results indicated that both catastrophizing and admission after treatment significantly improved; changes in these two variables had a significant relationship with changes in almost all other variables. Regression analysis showed that by controlling catastrophizing and severity of pain, change in admission could significantly predict a change in depression, disability and physical functioning (McCraine, 2007). The results of this study were consistent with the findings of Aminian (2011). His study dealt with the difficulty in regulating excitement and its effect on stutterers in terms of tone adjustment, including 264 subjects. The results showed that people had a negative relationship with emotional regulation and stuttering. Researchers have examined the negative emotions that, although not directly related to measuring the negative emotions of Iranians towards the Afghans, have been consistent with the overall

negative emotions found in the design of the research project.

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