Comparing the Effectiveness of Schema Therapy and Integrated Cognitive-Speech Approach on Negative Emotions and Distress Tolerance in People Suffering from Stuttering

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Quantitative Study

Abstract

Background: Stuttering is a communication disorder that includes primary and secondary behaviors. One of the problems in generalizing and consolidating the treatment of people with stuttering disorder is the inappropriate attitudes that have been created toward these people. This study was conducted with the aim to compare the effectiveness of schema therapy and integrated cognitive-speech approach on distress tolerance and negative emotions in people with stuttering disorder.

Methods: This quasi-experimental study was performed with a pretest-posttest design, follow-up, and a control group. The statistical population included all people with stuttering disorder of 18 to 30 years of age who referred to speech therapy clinics in Sabzevar, Iran, in 2019. The hidden part of stuttering, which includes emotions, feelings, fears, and worries arises in the minds of stutterers with age. Accordingly, in this study, adult stutterers of 18-30 years of age were considered. The statistical sample included 30 people with stuttering disorder who were selected using convenience sampling and were randomly assigned to two experimental groups and one control group (10 people in each group). The first experimental group received schema therapy in 12 sessions of 60 minutes and the second experimental group received integrated cognitive-speech therapy in 12 sessions of 60 minutes, while the control group did not receive any treatment. The research instruments were the Positive and Negative Affect Schedule (PANAS) designed by Watson and Tellegen (1985) and the Distress Tolerance Scale (DTS) developed by Simmons and Gaher (2005). Data collection was conducted in the pretest, posttest, and follow-up stages. The collected data were analyzed using repeated measures analysis of variance (ANOVA) and Tukey's post hoc test in SPSS software.

Results: The results showed that there was a significant difference between the mean pretest, posttest, and follow-up scores of distress tolerance and negative emotions in the

two experimental groups and control group (P < 0.05). Moreover, the significance of the interaction between the stages and the experimental groups in the mentioned variables indicates that, in the posttest and follow-up stages, the mean of the experimental groups differed significantly from that of the control group (F = 4.67, P = 0.016; F = 7.658, P = 0.002; F = 8.87, P = 0.001; F = 11.56, P = 0.001; P < 0.05).

Conclusion: The results showed that the two interventions of schema therapy and integrated cognitive-speech approach could greatly reduce negative emotions and increase distress tolerance and be used in the treatment of patients with stuttering disorder, but only the integrated cognitive-speech approach was effective on the distress tolerance index.

Keywords: Schema therapy; Integrated cognitive-speech approach; Negative emotions; Distress tolerance; Stuttering

Introduction

Stuttering is a disorder that usually begins during the first year of life. Stuttering is characterized by interruption in the natural flow of speech due to motor and involuntary speech events. Stuttering involves one or more of the following: repeating sounds, lengthening of sounds, inserting extra sounds, pausing between words, visibly substituting words to avoid a pause or audible interruption (Sadock, Sadock, & Ruiz, 2014). Stuttering usually occurs before 12 years of age, although, in most cases, it can be detected from the age of 18 months to 9 years. Moreover, its peak period is between 2 to 3.5 years and 5 to 7 years (Taghizadeh, Yarolahi, & Bahrami, 2018). In general, stuttering negatively affects many areas of quality of life (QOL), including vitality, cognition, daily activities, and social and emotional functioning (Scheurich, Beidel, Vanryckeghem, 2019). Abyar, Ahmadi Nasrabad Sofla, Mousavi Kia, and Zamani (2019) showed that there was a relationship between distress tolerance and stuttering. Therefore, one of the variables related to stuttering was distress tolerance.

Simons and Gaher (2005) conceptualized the concept of distress tolerance as an individual's ability to tolerate negative emotional states. They suggested that emotional distress tolerance is multidimensional in nature; it involves individual anticipation and the experience of negative emotions, including the ability to tolerate, assessing the emotional state as acceptable, how the person regulates their emotions, and how much attention is drawn to the negative emotions and how much of it interferes with performance. Lower levels of tolerance for negative emotional states, both concurrently and predictively, are more likely to be associated with substance use disorders, drug use, overeating symptoms, and post-traumatic stress symptoms.

Watson and Tellegen (1985) have classified emotions into two basic emotional dimensions; one is negative emotion. Negative emotions include fear, anxiety, sadness, depression, anger, and hostility. These emotions are part of a deterrent behavioral system whose primary purpose is to prevent behaviors that lead to unpleasant consequences. Findings showed that two emotional factors are related to different classes of variables. Negative emotions are associated with stress and poor coping, health-related complaints, and the frequency of unpleasant events (Naragon-Gainey, McMahon, & Chacko, 2017).

Several approaches have been suggested to reduce emotions and negative emotions in people with stuttering, including schema therapy and integrated cognitive-speech approach. Historically, the basic approaches to stuttering therapy are divided into the two categories of fluency shaping or fluency modification and stuttering modification. Cognitive reconstruction is another approach that sometimes takes a different view on the visible and invisible features of stuttering. The fluency shaping approach, based on active conditioning, is used to eliminate or reduce the visible features of stuttering, regardless of its internal features (Farazi, Gholami, Khodabakhshi, Shemshadi, & Rahgozar, 2014). Furthermore, the stuttering modification approach tries to reduce the visible features of stuttering by making stuttering smoother and easier. This approach changes the attitude and cognitive reactions of the person to stuttering in order to minimize the impact that the internal characteristics of stuttering have on the person. Finally, the cognitive reconstruction approach focuses solely on changing one's attitudinal, emotional, and cognitive responses to stuttering to reduce the impact of stuttering on the individual (Farazi, 2017). Safari Hafshejani and Khoramshahi (2020) studied the integrated cognitive-speech approach and found that this treatment approach was effective in improving stuttering.

Considering the importance of the components of negative emotions and distress tolerance in people with stuttering, and given the psychological damage caused by this disorder, which occurs chronically, the need for psychological interventions is felt. One of the common interventions in the field of psychological disorders as well as family injuries is the schema therapy approach (Mozaffari, 2019). Young, Klosko, and Weishaar (2014) developed a treatment plan for the treatment of patients with chronic cognitive problems and personality disorders. According to the schema therapy perspective, individuals with a set of conditions, including early maladaptive experiences and specific emotional moods, form a group of maladaptive schemas that influence their subsequent behaviors and reactions to the environment. In a study conducted by Mozaffari (2019), schema therapy was shown to be effective in reducing stuttering. Schemas determine a person's attitude towards himself or herself, the world, and the future. If these schemas are natural and positive, the person's tendency towards everything will be positive, hopeful, and successful, otherwise the individual will consider him/herself incapable, inadequate, and worthless, and will therefore feel that in dealing with problems, impenetrable obstacles stand in his/her way and whatever he/she does, he/she will fail (Renner, DeRubeis, Arntz, Peeters, Lobbestael, and Huibers, 2018). Dale (2015) showed that the integrated cognitive-speech approach is an integrated research strategy for exploring synergies in natural language performance.

Compared to schema therapy in the field of speech therapy, the fluency shaping approach or speech stuttering modification approach is still considered as one of the traditional and widely used approaches. This approach is used to eliminate visible stuttering behaviors and tries to change the physical mechanism of a person's speech. These changes include speech speed, speech rhythm, production pattern, sound pattern, or breathing pattern (Wingate, 1969). Blomgren, Roy, Callister, and Merrill (2005) described the basic approaches to stuttering treatment under the heading of fluency shaping or fluency modification and stuttering modification. Cognitive reconstruction is another approach that is used independently and sometimes in combination with the previous two approaches. The approach of speech psychological shaping is based on active conditioning to eliminate or reduce the visible features (symptoms) of stuttering, regardless of its internal features. The stuttering correction approach tries to reduce the visible features of stuttering by creating a smoother and easier stuttering (without avoidance) (Manning, 2010) and the cognitive reconstruction approach focuses on changing the attitudinal, emotional, and cognitive reactions to stuttering and its complications and consequences (Menzies, Onslow, Packman, and O'Brian, 2009). Kulgildinova et al. (2017), in a study on integrated cognitive-speech approach in language education practice among students, showed that integrated cognitive-speech approach was effective on language teaching practice of students.

The effectiveness of both schema therapy and integrated cognitive-speech approach on other variables in people with stuttering has been evaluated separately. However, the study of the literature on the above therapies in Iran did not show a study comparing the effectiveness of schema therapy and the integrated cognitive-speech approach on distress tolerance and negative emotions of people with stuttering. Therefore, the present study was conducted with the aim to compare the effectiveness of schema therapy and integrated cognitive-speech approach on distress tolerance and negative emotions in people with stuttering.

Methods

The present study was an experimental study with a pretest-posttest design, a control

group, and follow-up. In this study, after coordinating with and obtaining permission from the respected officials of speech therapy clinics in Sabzevar, Iran, 30 people out of 73 stuttering individuals, , were selected through available sampling, and then, were randomly (lottery) assigned to the three groups of schema therapy (10 people), integrated cognitive-speech group (10 people), and the control group (10 people). The participants included young men and women aged 18-30 years, who had referred to the speech therapy clinics in the third quarter of 2019 and had received no treatment. The hidden part of stuttering, which includes emotions, feelings, fears, and worries, arises in the minds of stutterers with age. Accordingly, in this study, adult stutterers of 18-30 years of age were considered. After selecting the subjects, the objectives of the research were explained to them, and they were asked to have the utmost cooperation. Then, pretest was performed in all three groups. Scheme therapy intervention and the integrated approach [which includes 12 sessions of specific therapy (initial assessment), interventions, individual therapy, group therapy, and final assessment (for individuals)] were implemented. Adult stuttering was done in an organized, purposeful, and coherent way in four sections. Fluency reconstruction of speech and reading, fluency reconstruction of stuttering, cognitive reconstruction, and group therapy sessions were presented to the experimental groups and the control group received speech therapy treatments. At the end of the intervention, posttest was performed for all three groups, and on the final sessions of the two-month follow-up, the tests were performed. Usually, with the help of computational methods, tables were made to determine the sample size according to the type of test, test power, and probability of the first type error, which was used to compare the mean of the two experimental groups and the control group. In this research, the test power was equal to 0.5, the probability of the first type error was equal to 0.05, the relative error of Cohen was equal to 0.8, and the sample volume of each group was 13 individuals according to Cohen's calculation table, of which 3 people were considered for fall. Finally, 10 people are selected for each group. The study inclusion criteria included willingness to participate in the study, stuttering at least at a mild level (by performing the stuttering severity test), no clinical and personality disorders approved by a psychiatrist (hospitalization), having a minimum education of high school diploma, age range of 18-30 years, and not undergoing other psychological therapies or using psychotropic drugs at the time of the intervention. The exclusion criteria included having substance abuse history, being absent from more than two sessions, not doing the assigned tasks and expressing unwillingness to cooperate, and occurrence of unforeseen events (e.g., migration or death).

The collected data were statistically analyzed using descriptive and inferential statistics in SPSS software (version 24; IBM Corp., Armonk, NY, USA). At the level of descriptive statistics, frequency, percentage, mean, and standard deviation, and at the level of inferential statistics, repeated measures analysis of variance (ANOVA) and Tukey's post hoc test were used to analyze the data. This study has been approved and registered on the Iranian clinical trial site with the number IRCT20191028045261N1; in addition, it was approved by the ethics committee of Islamic Azad University of Neyshabur, Iran, with the code of ethics of IR.IAU.NEYSHABUR.REC.1399.006.

Research instrument

Stuttering Severity Instrument-3: The Stuttering Severity Instrument-3 (SSI-3 is (a standard and validated test developed by Riley and Bakker (2009) and is used to measure the visible properties of stuttering.
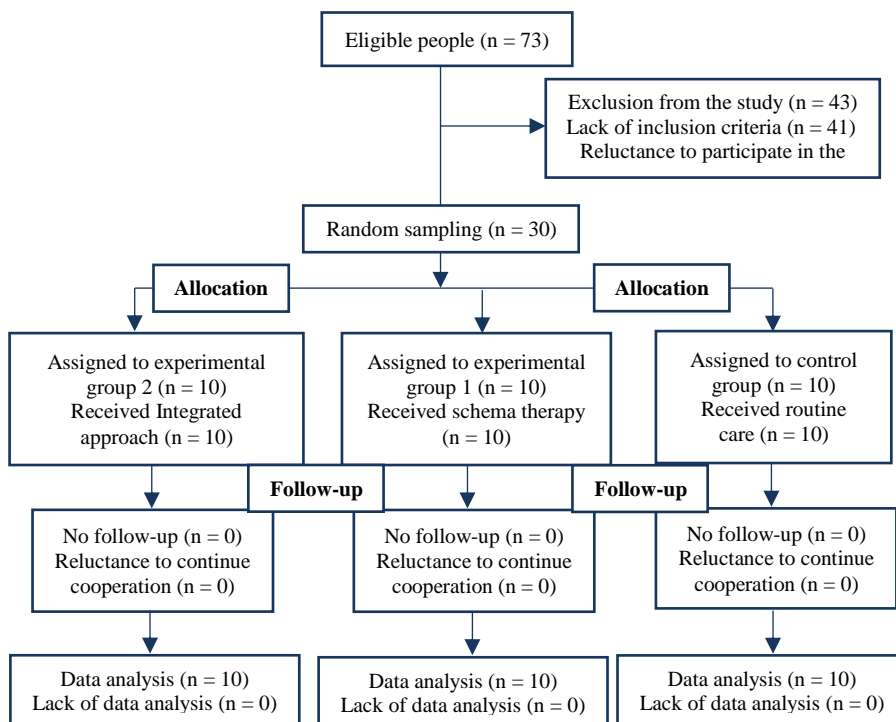
Figure 1. Study concert chart

The SSI-3 determines the frequency of stuttering, the length of stuttering, and the physical behaviors associated with stuttering, and ultimately, determines the intensity of stuttering (Riley & Bakker, 2009). The scores of the three components are added together and the stuttering severity score of the individual is categorized as very mild (10-17), mild (18-24), moderate (31-25), and severe (36-32). To determine the reliability of the SSI-3, the 200-word stuttering severity test was read twice by 24 available adults (20 men and 4 women) (age range: 18-30) within a period of 10 days. The reliability of the stuttering severity test was reported as 0.98 and the validity of the test was reported as 0.90 according to the Lavache index (Sharifi & Sharif, 2009).

Positive and Negative Affect Scale: The Positive and Negative Affect Schedule (PANAS) was developed by Watson and Tellegen (1985) and consists of 20 items that measure the two dimensions of negative emotion (10 items) and positive emotion (10 items). The items are scored on a 5-point scale ranging from very low (score 1) to very high (score 5), and the total score for each subscale ranges between 10 and 50. The internal consistency coefficient (alpha) was 0.88 for the positive emotion subscale and 0.87 for the negative emotion subscale. The negative emotion subscale has been reported 0.71. In the Iranian culture, Bakhshipour and Dezhkam (2006) have reported good validity and validity for this scale.

Distress Tolerance Scale: The Distress Tolerance Scale (DTS) is a self-assessment index developed by Simons and Gaher (2005). The DTS has 15 items in the four subscales of emotional distress tolerance, absorption (absorption of negativity by negative emotions), evaluation (estimation of mental distress), and regulation (regulation of efforts to alleviate anxiety). The items are scored on a five-point scale

ranging from 1 to 5 (1: strongly agree, 2: slightly agree, 3: neither agree nor disagree, 4: slightly disagree, and 5: strongly disagree). The alpha coefficients for this scale have been reported to be 0.72, 0.82, and 0.70, respectively, and for the whole scale to be 0.82. They reported that the questionnaire had good standard validity and initial convergence. In Iran, Andami Khoshk (2013) investigated the Cronbach's alpha of the total scale and reported it to be 86%. Jashnpour (2017) also reported a Cronbach's alpha of 85% for this scale.

The schema therapy protocol was developed by Young, Klosko, and Weishaar (2003) and includes a set of cognitive, emotional, and behavioral techniques performed over a 12-session course of therapy (Table 1).

Farazi et al. (2014) formulated the integrated cognitive-speech approach protocol in a structured way, which includes 12 sessions of specific therapy (initial assessment), interventions, individual therapy, group therapy, and final assessment (for individuals).

Table 1. Group schema therapy sessions in accordance with the model presented by Young et al. (2003) for stuttering individuals

Session	Description
First	Welcoming group members and introducing them to each other, motivating them for treatment, reviewing the structure of the meetings and the rules and regulations related to group therapy, identifying initial incompatible schemas, reviewing the goals and general logic of treatment, providing a definition for schema therapy, primary maladaptive schemas, characteristics of primary maladaptive schemas, and evolutionary roots of schemas, and performing pretest
Second	Providing an introduction of schematic domains and early maladaptive schemas, brief description of the biology of early maladaptive schemas, explanation of schema functions, brief description of schema continuity and improvement, introduction of maladaptive coping styles and responses that cause persistence of schemas, and examples from everyday life, definition of the concept of schematic mindsets
Third	Teaching conditional and unconditional schemas, creating readiness among stuttering people to measure and change schemas, defining the concept of schematic mindsets, teaching conditional and unconditional schemas, creating readiness among stuttering people to measure and change schemas
Fourth	Providing emotional imagery of emotional mood and providing feedback to further identify the schema and prepare for change
Fifth	Challenging the schema (desecration), explaining the continuum technique, writing a self-introduction letter, examining the evidence confirming and rejecting the schema
Sixth	Challenging the evidence confirming the schema, evaluating the advantages and disadvantages of coping styles, establishing a dialogue between the healthy aspect and the schema aspect
Seventh	Compiling and constructing educational cards, explaining the completion of the schema registration form, providing logic for the use of such techniques in treatment
Eighth	Performing imaginary conversations, explaining open parenting while working with mental images, writing letters to parents, and performing imaginary conversations with parents
Ninth	Reintroducing coping styles as important targets of change, creating readiness to model behavior, determining specific behaviors as possible targets of change
Tenth	Prioritizing behaviors for role modeling, listing to examples of clients' counter-responses, acknowledging inconsistency of clients' demands with their behaviors (contradictory behaviors), providing training appropriate to clients' demands, achieving his desires correctly
Eleventh	Increasing motivation for change, learning to practice healthy behaviors teaching through mental imagery and role play, learning to overcome barriers to behavior change and important life changes, identifying people who need individual intervention, and scheduling an individual counseling session with them
Twelfth	Teaching and practicing behavioral modeling techniques, encouraging stuttering individuals to abandon maladaptive coping styles, and practicing effective coping behaviors such as behavior change, motivation, reviewing the pros and cons of continuing behavior, and practicing healthy behaviors, overcoming barriers to behavior change, performing the posttest

Adult stuttering (18-30 years old) was done in an organized, purposeful, and coherent way in four sections of fluency reconstruction of speech and reading, fluency reconstruction of stuttering, cognitive reconstruction, and group therapy sessions (Table 2).

Results

The findings presented in table 4 show that 63% of the subjects were women, 60% of them were single, and 40% of them had a bachelor's degree (the highest number of people). The average age of the participants in this study was about 24 years which was randomly studied between the three groups.

The findings presented in table 4 show that the amount of negative emotions in all three groups in the pretest stage was about 29.5 points.

Table 2. Integrated cognitive-speech therapy sessions - speech using the pattern presented by Farazi et al. (2014)

Session	Description
First	Performing interviews and SSI-3 in verbal oral reading conversation and recording it, and performing pretest
Second	Performing prolonged speech (PS), easy onset (EO) speech psychotherapy methods with self-awareness of speech system function and breathing mechanism in oral speech, and reading simple words and phrases
Third	Implementation of PS, EO, and time-out (TO) treatment methods while reading Persian texts and during oral speech (short sentences) and conversational speech with emphasis on the use of exaggerated stretched speech based on the early stages of the Camperdown program
Fourth	Implementing therapeutic methods, PS, EO, light contact consonant (LCC), and TO while reading texts and during conversational speech, and question and answer with emphasis on the final stages of the Camperdown program
Fifth	Repeating the treatment program of the fourth session and applying the basic elements of MIDVAS (Van Riper's method) (Motivation, Identification, Desensitization) in conversational speech and reading different texts
Sixth	Performing the fifth session treatment program with the three final elements of MIDVAS (Van Riper's method) (Variation, Approximation, Stabilization) in critical questions and answers with emphasis on making eye contact during the conversation, and performing voluntary stuttering with self-control training
Seventh	Performing a speech rehabilitation treatment program with Rational Emotive Behavior Therapy (REBT), Personal Construct Therapy (PCT), Constructive Approach Narrative (CAN), and POWER (Permission, Ownership, Well-being, Self-esteem, Resilience, Responsibility) cognitive reconstruction methods based on strategies to empower the person to identify his/her irrational thoughts and beliefs
Eighth	Implementing the integrated cognitive-speech method in different speech/social situations, performing regular desensitization and mental imagery simultaneously, practicing telephone conversation with familiar people, and performing exercises based on social anxiety reduction and avoidance
Ninth	Implementing an integrated cognitive-speech method in spontaneous speech with critical questions and answers, and teaching attention, empathy, coping and social skills, courage, self-help and telephone conversations with familiar and unfamiliar people
Tenth	Implementing an integrated cognitive-speech method outside the clinic (stores and public places) with the therapist through regular desensitization and simultaneous mental imaging, and describing predictable limitations during conversation and oral reading
Eleventh	Performing an integrated method based on teaching self-control programs on correcting stuttering in conversational speech, spontaneous speech, and self-help in interpersonal relationships in therapeutic groups of 4 to 7 people
Twelfth	Conducting the eleventh session based on strategies to enhance controlled natural speech with cognitive monitoring, providing comfortable stuttering without avoidance, evaluating the end of the intervention period by conducting tests in conversational speech and oral reading in individual sessions, describing the progress and changes made to the subject, providing other treatment recommendations, and performing posttest

Table 3. Demographic characteristics of the subjects

Variable		Experimental group (1)	Experimental group (2)	Control group
Age (Mean ± SD)		24.70 ± 3.020	24.70 ± 3.164	23.70 ± 3.917
Gender [n (%)]	Female	5(16.66)	8(25.86)	6(20)
	Male	5(16.66)	2(6.46)	4(13.33)
Marital status [n (%)]	Married	4(13.33)	5(16.66)	3(9.69)
	Single	6(20)	5(16.66)	7(22.61)
Education [n (%)]	Diploma	2(6.66)	2(6.66)	1(3.33)
	Associate degree	1(3.33)	2(6.66)	2(6.66)
	Bachelor's degree	5(16.66)	3(10)	4(13.33)
	Master's degree	2(6.66)	3(10)	3(10)

In the posttest stages, the changes in the control group were very small and the decrease in the mean score of negative emotions was about 0.2. However, schema therapy in experimental group 1 caused the average of negative emotions to decrease from 29.8 to 23.4, and this indicates the effectiveness of the treatment. Similarly, in experimental group 2, treatment based on the integrated cognitive-speech approach reduced the average score from 30.8 in the pretest stage to 23 in the posttest stage, which confirms the effectiveness of this treatment. The tolerance of emotional turmoil in both experimental groups in the pretest stage was about 45.5, but in the posttest stages, the changes in the control group were very small. The mean stuttering intensity for all three groups participating in the study was higher than the cut-off score of SSI-3 and all subjects had at least mild stuttering in order to enter the study.

The result of Kolmogorov-Smirnov test indicated that the significance level for the experimental and control groups in all three stages of the test was more than 0.05, so the distribution of the dependent variable in the groups was normal ($P < 0.05$).

Table 4. Mean and standard deviation of pretest, posttest, and follow-up scores of negative emotions, distress tolerance, and stuttering severity

Variable	Group	Pretest Mean ± SD	Posttest Mean ± SD	Follow-up Mean ± SD
Negative emotions	Control	29.4 ± 4.22	29.2 ± 3.79	28.6 ± 4.42
	Experiment 1	29.8 ± 6.28	23.4 ± 1.89	23.6 ± 1.57
	Experiment 2	30.8 ± 6.26	23.0 ± 2.49	22.0 ± 3.01
Tolerating emotional distress	Control	11.20 ± 2.25	10.70 ± 2.05	10.70 ± 1.88
	Experiment 1	10.50 ± 2.59	11.90 ± 2.18	11.90 ± 2.18
	Experiment 2	10.70 ± 2.1+	11.70 ± 2.16	11.70 ± 2.16
Absorption by negative emotions	Control	6.30 ± 1.25	6.40 ± 1.50	6.50 ± 1.58
	Experiment 1	6.40 ± 0.84	10.0 ± 0.81	10.10 ± 0.73
	Experiment 2	6.40 ± 1.50	7.9 ± 1.52	8.1 ± 1.52
Mental assessment of distress	Control	19.0 ± 5.94	18.90 ± 3.72	19.0 ± 3.80
	Experiment 1	19.8 ± 3.70	20.7 ± 4.21	20.7 ± 4.21
	Experiment 2	1820 ± 4.80	21.4 ± 4.06	21.8 ± 3.99
Adjusting efforts to alleviate distress	Control	8.3 ± 2.49	7.9 ± 2.25	8.0 ± 2.26
	Experiment 1	9.9 ± 2.07	11.5 ± 2.50	11.5 ± 2.50
	Experiment 2	9.7 ± 3.02	12.0 ± 2.66	12.1 ± 2.51
distress tolerance	Control	44.8 ± 7.84	43.9 ± 4.50	44.2 ± 4.46
	Experiment 1	46.6 ± 4.78	54.1 ± 6.50	54.2 ± 6.37
	Experiment 2	45.0 ± 6.66	53.0 ± 6.46	54.7 ± 6.03
Absorption by negative emotions	Control	25.9 ± 3.78	24.9 ± 3.71	25.0 ± 3.63
	Experiment 1	26.1 ± 4.55	20.2 ± 3.88	20.9 ± 2.28
	Experiment 2	26.6 ± 4.67	18.8 ± 4.62	14.15 ± 4.39
Stuttering severity	Control	25.9 ± 3.78	24.9 ± 3.71	25.0 ± 3.63
	Experiment 1	26.1 ± 4.55	20.2 ± 3.88	20.9 ± 2.28
	Experiment 2	26.6 ± 4.67	18.8 ± 4.62	14.15 ± 4.39

The significance level of Box's M test in both treatments was more than 0.05 (F1 = 1.309 and F2 = 1.441; P > 0.05), so the assumption of covariance between the groups is the same. The results of Levene's test showed that the significance level in all three stages of the test in the control and experimental groups was more than 0.025 and the condition of equality of variances was confirmed.

The findings presented in table 5 show a significant difference between the mean of pretest, posttest, and follow-up scores of distress tolerance and negative emotions in experimental groups 1 and 2 and the control group (P < 0.05). Moreover, the significance of the interaction between the stages and the experimental groups in the mentioned variables indicated that in the posttest and follow-up stages, the mean of the experimental groups was significantly different from the control group.

The findings presented in table 6 show that in experimental groups 1 and 2, which underwent schema therapy and integrated approach, respectively, the difference between pretest and posttest scores of each of the variables was significant. However, in the control group, the difference between pretest and posttest scores was not significant in any of the research variables. There was no significant difference between posttest and follow-up scores in experimental groups 1 and 2; this confirms the effectiveness of the schema therapy and the integrated approach, and its retention rate compared to the pretest is also confirmed.

The findings presented in table 7 show no significant difference between the mean pretest, posttest, and follow-up scores of distress tolerance and negative emotions in experimental groups 1 and 2 (P < 0.05). However, the insignificance of the interaction between the stages and the group in the variables of distress tolerance and negative emotions indicates that, in these three variables, the effectiveness of the two types of treatment was not much different from each other. Therefore, it can be said that there was no difference between the effectiveness of schema therapy and integrated cognitive-speech on distress tolerance and negative emotions of people with stuttering.

Table 5. Comparison of pretest, posttest, and follow-up scores of distress tolerance and negative emotions in experimental groups and control group using repeated measures analysis of variance

Group	Scale	Source	SS	df	MS	F	P	Eta squared
schema therapy and control	Negative emotions	Level	154.53	2	77.26	6.34	0.004	0.261
		Group * Level	113.73	2	56.86	4.67	0.016	0.206
		Error	438.40	36	12.17			
		group	180.26	1	180.26	7.401	0.014	0.291
		Error	438.40	18	80.62			
	Distress tolerance	Level	112.53	2	56.26	4.849	0.014	0.212
		Group * Level	177.73	2	88.86	7.658	0.002	0.298
		Error	417.73	36	11.604			
		group	881.66	1	881.66	10.935	0.004	0.378
		Error	1451.26	18	80.62			
Integrated approach and control	Negative emotions	Level	264.53	2	132.26	11.55	0.001	0.391
		Group * Level	203.20	2	101.60	8.87	0.001	0.330
		Error	412.26	36	11.45			
		group	216.60	1	216.60	7.144	0.016	0.284
		Error	545.73	18	30.31			
	Distress tolerance	Level	178.03	2	89.01	8.19	0.001	0313
		Group * Level	251.43	2	125.71	11.56	0.001	0.391
		Error	391.20	36	10.86			
		group	721.06	1	721.06	7.968	0.011	0.307
		Error	1629	18				

*P < 0.05, **P < 0.01
SS: Sum of squares; df: Degree of freedom; MS: Mean of squares

Table 6. Couple comparison test results of the mean of variables in the experimental groups and control group

Group	Variable	Group	Stages	Posttest	Follow-up
schema therapy	Negative emotions	Experimental(1)	Pretest	6.40**-	-6.2**
			Posttest	---	0.2
		Control	Pretest	-0.20	-0.80
			Posttest	----	-0.60
	distress tolerance	Experimental(1)	Pretest	7.50**	7.60**
			Posttest	---	0.10
		Control	Pretest	-0.90	-0.60
			Posttest	---	0.30
Integrated approach	negative emotions	Experimental(2)	Pretest	7.80**-	-6.2**
			Posttest	---	0.2
		Control	Pretest	-0.20	-0.80
			Posttest	----	-0.60
	distress tolerance	Experimental(2)	Pretest	7**-	7.60**
			Posttest	---	0.10
		Control	Pretest	-0.90	-0.60
			Posttest	----	0.30

*$P < 0.05$, **$P < 0.01$

Discussion

The present study was performed to compare the effectiveness of schema therapy and integrated cognitive-speech approach on negative emotions and distress tolerance in patients with stuttering. Research findings showed that schema therapy and integrated cognitive-speech approach were effective on negative emotions and distress tolerance in people with stuttering.

According to the findings, it can be concluded that there was no difference between the effectiveness of schema therapy and integrated cognitive-speech on negative emotions and distress tolerance in people with stuttering. The above findings are consistent with that of the studies by Dadomo, Grecucci, Giardini, Ugolini, Carmelita, and Panzeri (2016), Bidari and Hajializadeh (2019), Dale (2015) and Watkins, Smith, Davis, and Howell (2008). The psychological damage caused by language disorders necessitates psychological interventions; thus, schema therapy uses dialectical strategies, accreditation, problem solving, cognitive style, and client management. Moreover, it reduces disruptive behaviors in life and therapies, and helps the individual to generalize the behavioral skills to their life through treatment and behavioral skills teaching so that he or she can reduce mental disorders (Kim, Crouch, Olatunji, 2017).

Table 7. Comparison of pretest, posttest, and follow-up scores of distress tolerance and negative emotions in experimental groups 1 and 2 using repeated measures analysis of variance

Scale	Source	SS	df	MS	F	P	Eta squared
Negative emotions	Level	712.13	2	356.06	30.89	0.001	0.632
	Group * Level	16.93	2	8.46	0.735	0.487	0.039
	Error	414.93	36	11.526			
	group	1.667	1	1.667	0.062	0.807	0.003
	Error	487.06	18	27.059			
Distress tolerance	Level	699.30	2	349.95	188.81	0.001	0.913
	Group * Level	12.033	2	6.017	3.249	0.051	0.153
	Error	66.667	36	1.852			
	group	8.067	1	8.067	0.073	0.790	0.004
	Error	1990.33	18	110.574			

*$P < 0.05$, **$P < 0.01$
SS: Sum of squares; df: Degree of freedom; MS: Mean of squares

The results of the study by Farazi et al. (2014) showed that the integrated cognitive-speech method was more effective in the treatment of adult stuttering than the psychological speech formation approach, which is consistent with the findings of the present study and the use of this treatment method is recommended to all speech therapists. Compared to schema therapy in the field of speech therapy, stuttering management therapies are based on the combining of processes directed towards stuttering desensitization, increasing stuttering acceptance, and movement techniques directed toward reducing the stress associated with stuttering moments. One of the hallmarks of cognitive regenerative therapy or stuttering management is that these therapies primarily reduce anxiety and negative emotions, but also include techniques that aim to change the nature of stuttering events (Blomgren et al., 2005). Because the integrated cognitive-speech approach has been more useful in transferring systematic psychological speech skills during therapeutic sessions, it has created mental retention and continuity. Furthermore, the psychological maintenance and the created attitudinal and cognitive changes for stutterers depend more on the use of integrated cognitive-speech method than schema therapy (Farazi, 2017). Erfan, Noorbala, Karbasi, Mohammadi, and Adibi (2018) studied the effectiveness of emotional schema therapy on emotional schemas and emotional regulation in irritable bowel syndrome (IBS) and found that emotional schema therapy was effective in improving emotional schemas and difficulty in regulating emotions in these patients. The finding of this study is in line with the findings of the present study.

According to the findings, it can be inferred that schema therapy was effective on negative emotions and distress tolerance in people with stuttering. The above findings were in line with the results of the studies by Seyf Hosseini, Asadi, Sanagoo, and Khajvandkhoshly (2019), Shokhmgar (2016), Mirkhan, Khalatbari, and Tajeri (2019), Khasho, van Alphen, Heijnen-Kohl, Ouwens, Arntz, and Videler (2019). Explaining the above findings, it can be said that intolerance of distress plays an important role in the development and persistence of anxiety. People with high distress tolerance are able to tolerate negative psychological states, while people with low distress tolerance tend to engage in compensatory behaviors to alleviate internally disturbing experiences (Simons & Gaher, 2005). Because people with stuttering disorder have problems in their relationships and cannot establish a good relationship with others. Due to their stuttering, they are not accepted by others, and generally, have no satisfaction with life and no positive feelings, and they have negative feelings. These individuals evaluate the events and situation of their life as unfavorable and experience most negative emotions such as anxiety, depression, and anger. Therefore, schema therapy can create special characteristics and conditions and, as a result, increase their positive feelings so that they can have a more positive assessment of the events and happenings around them and reduce their confusion. These people typically experience more stress, sometimes react prematurely, and cannot cope successfully with unorganized success, or a situation whose outcome is uncertain. They do not perform well in ambiguous tasks and experience a level of uncertainty, and so, they will be more confused and have difficulty in decision-making situations because they have no basis for judging the potential outcome of their decisions. Thus, schema therapy is described as an evolved motivational system for regulating negative emotions. This treatment can be effective in increasing the distress tolerance of people with stuttering disorder (Ghaderi, Kalantari, & Mehrabi, 2016).

According to the findings, it can be concluded that the integrated cognitive-speech approach was effective on negative emotions and distress tolerance in people

with stuttering. The above findings were in line with the results of the studies by Dale (2015), Cernak, Asaei, and Hyafil (2018), Farazi et al. (2014). Explaining the above results according to the theory of Simons and Gaher (2005), it can be said that distress tolerance is a modifiable risk factor and the results support the results of emotional regulation strategies interventions and treatment of problems in adults. Distress tolerance is one of the common structures in the field of emotional disorder (Simons & Gaher, 2005). People with stuttering do not have the ability to experience and tolerate negative emotional states, and in fact, the capacity to experience and resist emotional distress in distress tolerance is not seen as a structure. Therefore, since the effect of stress on psychological structures depends on the level of anxiety, the more a person uses the principles, beliefs, and values he believes in, instead of using inefficient methods, the more he/she can increase his/her distress level. Hence, in cognitive therapy, the first step is to make the patient aware of his negative and irrational thoughts. This treatment can be effective on tolerance of stuttering disorder in people with this disorder (Zvolensky, Bernstein, & Vujanovic, 2011). In explaining the above results, according to the theory of Watson, Clark, and Tellegen (1988), it can be said that, due to their problems, people with stuttering have negative moods such as fear, sadness, and anger. They experience more stress and dissatisfaction in interaction with the environment and tend to describe their failures more, see the world negatively, and have a weak self-concept, so their mood is negative and these people are distressed because of these problems, and so, become confused and have negative moods. The integrated cognitive-speech approach causes them to accept their thoughts and feelings as they are manifested, and this reduces their negative moods. With this approach, the mind moves from a negative emotion to a positive emotion and organizes one's emotions. Therefore, this therapeutic approach is effective in reducing negative emotions in people with stuttering disorder (Makvand Hoseini, Najafi, & Khaleghi, 2018).

Conclusion

In general, the results of the present study showed that the studied therapies could greatly reduce negative emotions and increase distress tolerance, and thus, be used in the treatment of patients with stuttering disorder. As individuals with stuttering disorder have problems in their relationships and cannot establish a good relationship with others, they are not accepted by others, generally, have no satisfaction with life and no positive feelings, and have negative feelings, these people evaluate the events and situation of their lives as unfavorable and experience most negative emotions such as anxiety, depression, and anger. Therefore, schema therapy and integrated approach can create special features and conditions, and increase positive emotions so that these individuals can have a more positive assessment of the events and happenings around them and reduce the amount of their confusion. Therefore, it is recommended that both treatments be used to treat people with stuttering. Other similar studies should be performed in other clinical samples with stuttering to allow better comparisons of results and increase generalizability of the results. In future research, in addition to the waiting list group, other treatments should be used to evaluate the effect of different treatments.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

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