Research Paper

Effectiveness of Acceptance Commitment Therapy in Social Anxiety Disorder: Application of a Longitudinal Method to Evaluate the Mediating Role of Acceptance, Cognitive Fusion, and Values

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ABSTRACT

Introduction: The aim of the present study was to examine the effectiveness of acceptance and commitment therapy (ACT) on symptom severity, fear of negative evaluation, quality of life (QoL), and the mediating role of acceptance, cognitive fusion, and value among patients with social anxiety disorder (SAD).

Methods: Thirty patients diagnosed with SAD were randomized in the intervention (n=15) or waiting list groups (n=15). The social phobia and Anxiety inventory (SPAI), brief fear of negative evaluation scale (BFNE), World Health Organization quality of life (WHOQoL) scale, social anxiety-acceptance and action questionnaire (SA-AAQ), cognitive fusion questionnaire (CFQ), and valued living questionnaire (VLQ) were administered before, immediately after, and at a one-month follow-up. Repeated measurement design was used in the intervention group to investigate the changes of mediation and outcomes variables in the pre-test, during treatment, and post-test. Twenty-four patients completed the study. Data were analyzed using one-way analysis of covariance (ANCOVA), multivariate analysis of covariance (MANCOVA), and repeated measurements.

Results: There were significant differences between the intervention and waiting list groups in the severity of symptoms (P=0.001), fear of negative evaluation (P=0.002), and QoL (P=0.03), as well as in terms of specific measures of SA-AAQ (P=0.001), cognitive fusion (P=0.001), an important section of VLQ (P=0.001). Repeated measurement results showed that acceptance and action of social anxiety and cognitive fusion had a mediating role in the severity of social anxiety, fear of negative evaluation, and QoL.

Conclusion: The results indicated the effectiveness of ACT for SAD and highlighted the mediator role of social anxiety, acceptance and action, and cognitive fusion in the severity of SAD.

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Highlights

• This study evaluated effectiveness of acceptance commitment therapy(ACT) on social anxiety disorders (SAD).

• This study evaluated mechanisms of change of ACT in SAD.

• ACT has effectiveness for SAD.

• Acceptance and action and cognitive fusion have mediator role in SAD.

Plain Language Summary

Social anxiety disorder (SAD) is one of the most psychiatric disorders. Although CBT has been effective for SAD, most patients continue to demonstrate residual symptoms and impairment after treatment. Over the past several years, a third-wave behavioral therapy has been developed within behavioral and cognitive approaches. Some researchers suggest a new generation of psychotherapists termed acceptance and commitment therapy (ACT) that has many evidence in SAD. However, studies have not examined the mechanism of change of ACT in SAD using methods and proper instruments.in the present study ACT have effectiveness for SAD. In addition to, acceptance and action and cognitive fusion have mediator role in SAD.

1. Introduction

Social anxiety disorder (SAD) refers to extreme fear or anxiety in social situations, in which the individual may be scrutinized by other people (American Psychiatric Association, 2015). Patients with SAD worry that they may seem tense, weak, stupid, boring, frightening, dirty, or unpleasant to others (American Psychiatric Association, 2015). These patients may also be concerned about behaving in a way that seems unusual or showing signs of arousal, voice shaking, perspiration, stuttering, or gazing that reveal their anxiety and lead to negative evaluations from others (American Psychiatric Association, 2015). The 12-month prevalence of SAD in Iran has been reported to be 2.3% (Hajebi et al, 2018). The translational neuroscience approach to understanding the development of SAD shows that extremely behaviorally inhibited and temperamentally anxious young children are at risk of developing SAD (Fox & Kalin, 2014). Also, brain regions, including the central nucleus of the amygdala, anterior hippocampus, and orbitofrontal cortex play roles in early-life anxiety (Fox & Kalin, 2014).

Cognitive behavioral therapy (CBT) is the most widely studied therapy for SAD (Dalrymple & Herbert, 2007; Hofmann & Otto, 2008; Mayo-Wilson et al., 2014; Cuijpers et al., 2016; Thurston et al., 2017; Huppert et al., 2018). Although CBT has been effective for SAD, most patients continue to demonstrate residual symptoms and impairment after treatment. Also, a significant percent-

age of patients with SAD do not respond to treatment at all (Dalrymple & Herbert, 2007). In addition, many of those who respond to this therapy report many symptoms following the therapy, and their SAD scores will never be the same as those of healthy individuals (Dalrymple & Herbert, 2007). CBT-based therapies for anxiety disorders, instead of addressing avoidance, encourage the patients to directly confront the situations and stimulants that provoke anxiety in anxiety disorders (Eifert & Forsyth, 2005). Researchers had recently focused on a more general form of anxiety, termed experiential avoidance (EA). EA is defined as trying to avoid internal experiences, such as feelings, thoughts, memories, and physical sensations that are negatively evaluated (Eifert & Forsyth, 2005). Worrying about others' evaluations or daily life problems is a natural experience unless it becomes extreme or exaggerated (Eifert & Forsyth, 2005). When the negative effect accompanied by worries and preoccupations is avoided instead of being accepted, the real problems arise (Eifert & Forsyth, 2005). Over the past several years, a third-wave behavioral therapy has been developed within behavioral and cognitive approaches. Some researchers suggest a new genera-tion of psychotherapists termed acceptance and commitment therapy (ACT) (Hayes et al., 1999; Hayes, 2016), which has been inspired by the devel-opment of cognitive neuroscience (Naji & Ekhtiari, 2016).

ACT is a third-wave psychotherapy to enhance psychological flexibility, i.e. improving the practical ability to choose among various options, not just trying to avoid

disturbing feelings, thoughts, memories, or desires (Forman & Herbert, 2008). Recent studies have shown the effectiveness of ACT for patients with SAD and mechanism of change in various groups of population (Block & Wulfert, 2000; Ossman et al., 2006; Dalrymple & Herbert, 2007; Vander Lugt, 2011; England et al., 2012; Yuen et al., 2013; Kocovski et al., 2013; Niles et al., 2014; Craske et al., 2014; Hancock et al., 2018; Toghiani et al., 2019). However, studies have not examined the mechanism of change of ACT in SAD using longitudinal methods and proper instruments so far. Previous research has used the acceptance and commitment questionnaire (AAQ-II) or the cognitive fusion measurement that is not suitable (Gillanders et al., 2014). The aim of the present study was to determine the effectiveness of ACT in improving social anxiety, fear of negative evaluation, and WHOQoL (QoL) of patients with SAD to obtain more evidence. In the current research, for the first time, we examined three mechanisms of change of ACT in SAD using the longitudinal method. Given the popularity of ACT and special attention to mind and linguistic issues, such as cognitive fusion, we decided to investigate the mediating role of acceptance and action, cognitive fusion, and valued living in the severity of social anxiety, fear of negative evaluation, and QoL in SAD.

2. Materials and Methods

In the present study, a pre-test-post-test design with a control group was used. Gall et al. (1996) stated that the sample size in interventional studies must be at least 15 subjects for each group. In total, 30 patients diagnosed with SAD were selected from those attending the psychology clinic of Taleghani Hospital (Tehran, Iran) from July to January 2015 and assessed using the anxiety disorders interview schedule for DSM-IV (Di Nardo et al., 1994; & Birashk 2013) and the structured clinical interview for DSM-IV axis II disorders (First et al, 1997). Interviews were conducted by a clinical psychologist (two holders of PhD in clinical psychology). Patients with a primary diagnosis of social anxiety and comorbidities, such as anxiety and mood disorders as the secondary diagnosis (not primary), were included in the study. They were randomly divided into the intervention (n=15) and waiting list (n=15) groups. Ten subjects were diagnosed with comorbid mental disorders (%42), of whom four cases had generalized anxiety disorder (%17), one had obsessive-compulsive disorder (%4), three had major depressive disorder (13%), one had dysthymia (%4), and one had panic disorder (%4). In the II axis, five subjects were identified with avoiding personality disorder (21%). The Mean±SD age of the intervention group

was 27.25±7.22) years and that of the control group was 26.75±5.42) years. Five subjects from the intervention group and seven from the control group were female. Figure 1 displays a diagram of patient flow. The patients were not screened in the past or the present for being disorganized.

The inclusion criteria were as follows: Being diagnosed with SAD according to ADIV-IV, having at least 18 years of age, having at least middle-school education, and being willing and able to give informed consent for participation in the study. The exclusion criteria were as follows: Those taking psychological therapy in the past year, those taking medication during the six months, patients diagnosed with mood or other anxiety disorders, alcohol or substance abuse, somatization, psychotic, and conversion disorders, personality disorders, the lack of willingness to participate in the study, and simultaneous participation in other psychotherapies (through questions from patients). The participants received ACT based on the Eifert & Forsyth (2005) protocol. The therapy was delivered in an individual format, one-hour session per week for 12 sessions. The first author (Esmail Soltani) who participated in four courses of ACT (nearly 100 hours) delivered the therapy. In addition, supervision was done by another author (Ali Farhoudian; psychiatrist, instructor, and expert in the field of ACT). The summary of therapy sessions is presented in Table 1.

We used a longitudinal method for the intervention group to investigate the mechanisms of change of ACT. The most common limitation of clinical trials is the failure to establish a timeline between the proposed mediator or the mechanism of change and outcome. In this method, the mediator must be temporally prior to the outcome.

The strongest method is to measure the processes and outcomes during the therapy (Kazdin, 2007). The questionnaires were presented to the secretary of the clinic before, during, after therapy, and at follow-up (one month after therapy) for both groups. All questionnaires were completed by the intervention group subjects in the pre-test during the third, sixth, ninth, and twelfth sessions.

Informed consent was obtained. Then, the main measures of the study were administered to the patients. The outcome variables were social anxiety symptoms, fear of negative evaluation, and QoL. The process variables were acceptance and action, cognitive fusion, and valued action.
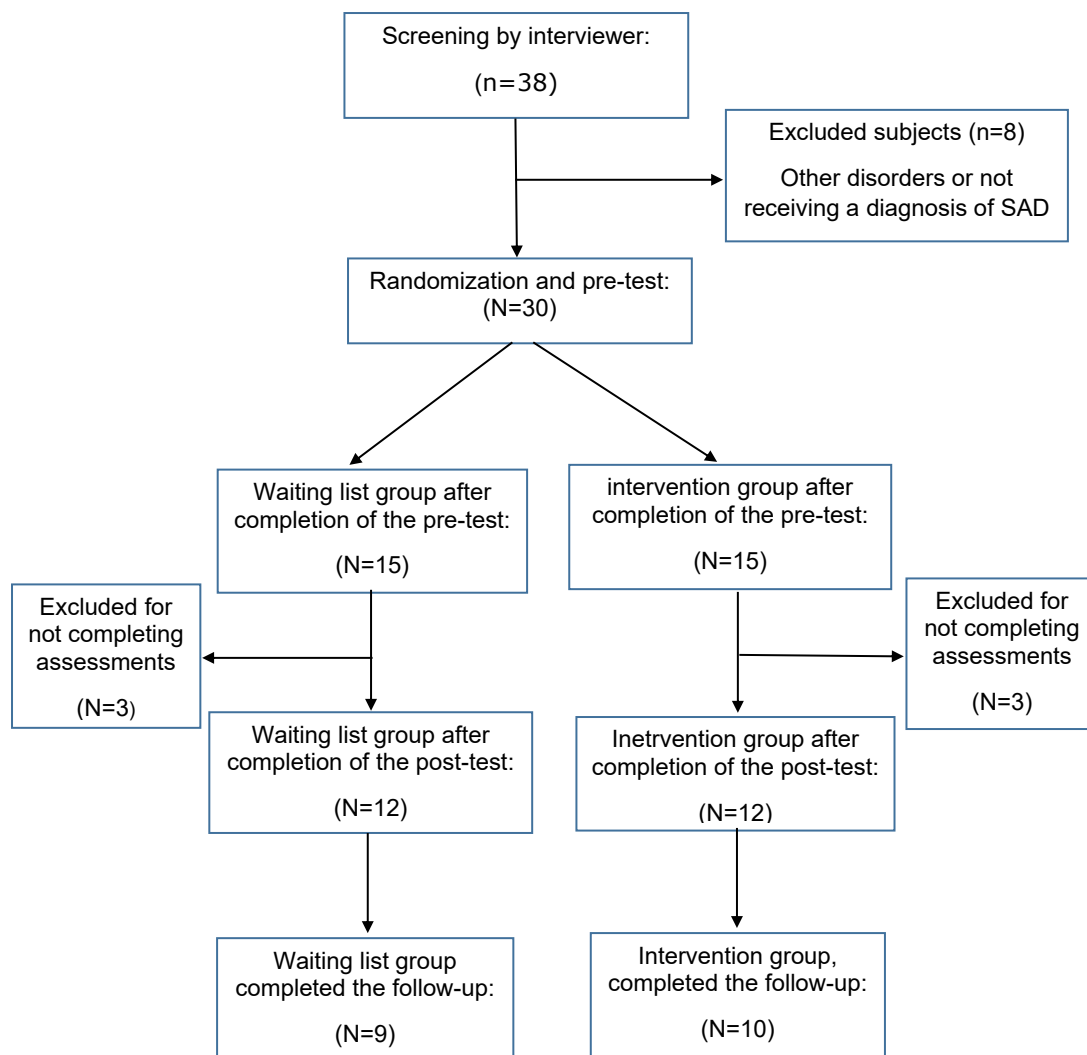
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Figure 1. The participants' flow diagram

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Measurements

ADIS-IV: This is a structured interview developed by Di Nardo, et al. (1994) to assess the course of anxiety disorders. It includes diagnostic and differential sections for all anxiety disorders. In addition, some parts of it assess mood, somatoform, and substance use disorders because these conditions have high comorbidity with anxiety disorders, and their symptoms are usually similar to those of anxiety disorders. Except for dysthymia, diagnosis of psychological disorders using the ADIS-IV has shown good to excellent (from 0.67 to 0.86) inter-rater reliabilities (Di Nardo et al., 1994).

SCID-II

This is a semi-structured interview for personality disorders. It has been designed to assess ten personality disorders and passive-aggressive personality and depressed personality disorders. It has 119 items and is administered in less than 20 minutes. The interviewer directs the SCID-II according to the questions answered 'yes" by the interviewee. First et al. (1997) reported a kappa coefficient of 0.53 for the interview among psychiatric patients. The re-test reliability coefficient of SCID-II was 0.87 and face and content validity was proper in the Persian version (Bakhtiari, 2000).

Social anxiety-acceptance and action questionnaire (SA-AAQ)

This questionnaire was created by MacKenzie and Kocovski (2010) to assess acceptance specific to social anxiety symptoms and the extent to which the person is aware of his/her thoughts and feelings about his/her own social anxiety without trying to change them. SA-AAQ has good reliability and validity with other constructs. The results from factor analysis of SA-AAQ in

Table 1. Summary of therapy sessions

Session	Main Interventions
1	Psychoeducation and familiarity with the therapy process.
2	Setting the stage for accepting the therapy, and analyzing the cost-benefits of the previous control attempts.
3	Setting the stage for accepting the therapy, creative hopelessness, and making room for new solutions.
4	Acceptance and valued living as alternatives for anxiety management: Mindfulness, acceptance, and value selection.
5	Acceptance and valued living as alternatives for anxiety management: Getting close to personal values through acceptance and self-observation.
6	Developing a flexible behavior pattern through value-based exposure.
7 to 11	Staying committed to personal values and actions.
12	Review of previous sessions, getting ready for relapse and failure, and identifying high-risk situations.

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Iran yielded three factors and were correlated between SA-AAQ and the other constructs. The reliability of the SA-AAQ using Cronbach's α and test re-test coefficients yielded values of 0.84 and 0.84, respectively (Soltani et al., 2016a).

The believability of anxious feelings and thoughts questionnaire (BAFT)

This questionnaire was created by Herzberg et al. (2012) to assess cognitive fusion in people with anxiety disorders and their tendency toward fusion with anxious feelings and thoughts. It has 16 questions that are scored on a Likert scale. It assesses beliefs and not the intensity of the symptoms. The validity and reliability of the questionnaire were shown to be good in a sample of non-clinical patients and a sample of patients with high anxiety in a study conducted by Herzberg et al. (2012). The factor structure of the questionnaire consists of somatic concerns, emotion regulation, and negative evaluation. Internal consistency for non-anxious and anxious people was 0.90 and 0.91, respectively. Furthermore, the questionnaire and its subscales showed a strong construct validity in relation to other procedural and consequential measures in both non-anxious and anxious populations. Besides, the re-test reliability for anxious people was 0.77 (Herzberg et al., 2012). The results of factor analysis of BAFT in Iran yielded three factors and there was a correlation between BAFT and other constructs. The reliability of the BAFT using Cronbach's α and test re-test coefficients yielded values of 0.82 and 0.81, respectively (Soltani et al., 2016b).

Cognitive fusion questionnaire (CFQ)

This questionnaire was created by Gillanders et al. (2014). It has seven questions that are scored on a Likert scale. Higher scores are indicators of higher fusion. Gillanders et al. (2014)conducted a study on different sets of samples and found good evidence of the adequacy of factor structure, reliability, time stability, validity, discriminant validity, and sensitivity to treatment. Four-week re-test reliability was reported to be 0.81 (Gillanders et al, 2014). The results from factor analysis of CFQ in Iran yielded one factor and there was a correlation between CFQ and other constructs. The reliability of the CFQ using Cronbach's α and test re-test coefficients yielded values of 0.86 and 0.86, respectively (Soltani et al., 2016b).

The social phobia and anxiety inventory (SPAI)
This inventory has 45 items and two subscales, including social phobia and agoraphobia. Among the 45 items, 32 items are about social phobia, and 13 items are about agoraphobia. Turner et al. (1989) found a two-week test re-test reliability of .86 for the inventory. The results of the validity of SPAI in Iran showed that there was a correlation between SPAI and other questionnaires. The reliability of the SPAI using Cronbach's α and test re-test coefficients yielded values of 0.97 and 0.99, respectively (Boland Nazar, 2001). In the present study, the 32 items assessing social phobia were used.

The brief fear of negative evaluation (BFNE) scale

This was developed by Learry (1983). It has 12 items assessing the respondent's experienced anxiety about negative evaluation. Learry (1983) in a study on stu-

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dents, showed a high correlation between the short and long forms of the scale (r=0.96). A Cronbach's α of 0.96 and a test re-test reliability of 0.75 have been reported for the BFNE. The results of Cronbach's α reliability of BFNE in Iran yielded a value of 0.84 (Shokri et al, 2008).

Valued living questionnaire (VLQ)

This questionnaire is a two-section instrument developed by Wilson et al. (2010) to assess valued living. In the first section, using a Likert-type scale, the participants arranged ten life domains in order of priority. The second section of this questionnaire asks the respondents to rate on a Likert-type scale how consistently they have lived according to this pattern of valued behavior in every domain of life, during the previous week. In two studies, Cronbach's α and test re-test reliability for this questionnaire were reported to be good. Construct and concurrent validity of this questionnaire were reported to be good, with problematic domains of life and psychological strong points (Wilson et al., 2010). The results of Cronbach's α and test re-test coefficients yielded values of 0.84 and 0.89 in Iran, respectively (Soltani et al, 2016b).

World Health Organization WHOQoL (WHOQoL)

This questionnaire assesses four areas of QoL: physical health, psychological health, social relationships, and environment. The studies done by the WHO have shown the suitability of this questionnaire in 40 countries of the world (WHOQoL group, 1996). Also, the psychometric properties of the Iranian version of this questionnaire indicate it can be used in Iran (Nejat et al., 2004).

Statistical analysis

The study data were analyzed using univariate analysis of covariance (ANCOVA) and multivariate analysis of covariance (MANCOVA) and repeated measurements. Analyses were performed using SPSS software, version 16.

3. Results

The assumptions of the statistical methods were examined, and the scores were adjusted in the intervention and waiting list groups. They were compared in terms of their post-test and follow-up scores regarding the study variables. Table 2 shows the descriptive statistics for the measures of this study. The results indicated a significant difference between the two groups in the mean scores of SPAI (P=0.001) and BFNE in the post-test and follow-up (P=0.002). In the examination of WHOQoL, the p-value of Levene's test was higher than 0.05; therefore, the assumption of the equality of variances was questioned (0.005). However, because the data were normally distributed, and given that the ANCOVA was resistant to violation of this assumption, and there is no nonparametric test equivalent to this analysis, we used analysis of the variance of post-test means, which indicated a significant difference between the two groups for WHOQoL (F=4.08, P=0.05), but analysis of the variance of follow-

Table 2. Mean±SD of outcome and process variables in the post-test and follow-up

Variables	Mean±SD					
	Intervention			Control		
	Pre-test	Post-test	Follow-up	Pre-test	Post-test	Follow-up
SPAI	111.82±30.85	29.61±23.32	33.80±9.12	95.73±19.47	108.00±32.24	114.22±33.42
BFNE	34.91±8.06	16.83±6.96	16.60±9.60	34.08±6.12	33.50±6.47	32.11±8.25
WHOQOL	55.50±14.97	71.75±16.93	66.80±16.62	56.50±10.02	60.66±8.79	59.77±8.22
SA-AAQ	53.63±10.96	111.41±5.11	116.80±11.34	60.50±14.36	63.08±14.62	60.88±14.05
BAFT	84.50±11.83	28.16±7.38	27.80±7.75	81.89±11.96	83.66±11.12	85.11±12.41
CFQ	29.83±9.60	12.83±4.95	10.60±2.54	32.83±7.44	36.66±7.53	35.22±7.04
VLQ	141.08±17.71	140.50±17.13	135.50±18.70	144.50±18.59	146.91±18.17	143.33±20.27

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Abbreviations: SPAI: Social phobia and anxiety inventory; BFNE: Brief fear of negative evaluation; WHOQOL: WHO quality of life; SA-AAQ: Social anxiety-acceptance and action questionnaire; BAFT: Believability of anxious feelings and thoughts; CFQ: Cognitive fusion questionnaire; VLQ: Valued living questionnaire; M: Mean; SD: Standard deviation.

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Table 3. Multivariate analysis of covariance of subscales and analysis of covariance of variables in the post-test and follow-up

Variables	Time	MS	F	P	Eta
SA-AAQ	Post-test Follow-up	13594.01 15515.20	50.13 124.86	0.001 0.001	0.70 0.88
Acceptance	Post-test Follow-up	1773.6 2340.74	29.8 123.38	0.001 0.001	0.61 0.89
Non-judging of experience	Post-test Follow-up	2244.8 2327.74	57.6 155.71	0.001 0.001	0.75 0.91
Action	Post-test Follow-up	368.4 346.50	6.50 15.37	0.02 0.002	0.25 0.52
CFQ	Post-test	2058.4 2578.15	60.6 91.22	0.001 0.001	0.74 0.85
BAFT	Follow-up	18871.3 15656.72	256.2 158.02	0.001 0.001	0.92 0.90
Somatic concerns	Post-test	2690.4 2148.72	120.2 59.77	0.001 0.001	0.86 0.81
Emotion regulation	Follow-up	955.2 1035.86	45.6 80.33	0.001 0.001	0.70 0.85
Negative evaluation	Post-test	1596.5 1044.08	240.8 130.57	0.001 0.001	0.92 0.90
VLQ	Post-test	135.96 177.78	0.54 0.50	0.46 0.48	0.02 0.03
VLQ-important	Follow-up	360.35 504.85	0.8 5.23	0.01 0.03	0.28 0.25
VLQ-consistency	Post-test	39.76 80.50	0.27 0.42	0.60 0.52	0.01 0.02
SPAI	Follow-up	41589.63 3712.04	7.61 49.60	0.001 0.001	0.77 0.74
BFNE	Post-test	1667.2 1176.18	3.52 14.05	0.002 0.002	0.62 0.47
WHOQoL	Follow-up	790.9 246.15	4.81 1.62	0.03 0.21	0.14 0.09
WHOQoL-physical health	Post-test	71.04 19.26	3.79 1.31	0.06 0.27	0.17 0.09
WHOQoL-psychological	Follow-up	58.49 65.32	4.44 4.48	0.04 0.05	0.19 0.25
WHOQoL-environment	Post-test	50.9 18.61	2.85 1.54	0.10 0.23	0.13 0.10
WHOQoL-social relationship	Follow-up	18.42 3.28	3.48 0.58	0.07 0.46	0.16 0.04

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Abbreviations: SPAI: Social phobia and anxiety inventory; BFNE: Brief fear of negative evaluation, WHOQoL: WHO quality of life; SA-AAQ: Social anxiety-acceptance and action questionnaire; BAFT: Believability of anxious feelings and thoughts; CFQ: Cognitive fusion questionnaire; VLQ: Valued living questionnaire; M: Mean; SD: Standard deviation.

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Table 4. Inter-subject effects for the mediator and outcome variables in the intervention group

Variables	Time	F	MS	Eta	P
SA-AAQ		45.00	7803.00	0.80	0.001
BAFT		11.47	4218.75	0.55	0.003
CFQ		5.71	363.00	0.34	0.03
SPAI	3rd session along with the pre-test	1.41	864.73	0.11	0.26
BFNE		4.34	96.33	0.28	0.06
WHOQoL		4.07	33/385	0.27	0.06
SA-AAQ		36.94	12416.33	0.77	0.001
BAFT		62.77	12838.02	0.85	001/0
CFQ		11.42	1200.00	0.50	006/0
SPAI	6th session using two previous assessments	27.49	23598.63	0.71	001/0
BFNE		15.33	1260.75	0.58	002/0
WHOQoL		0.24	60.75	0.02	63/0
SA-AAQ		56.32	11802.33	0.83	0.001
BAFT		151.07	12139.12	0.93	0.001
CFQ		24.52	1045.23	0.69	0.001
SPAI	9th session using three prior assessments	85.07	33132.77	0.88	0.001
BFNE		24.89	1518.75	0.69	0.001
WHOQoL		3.50	385.33	0.24	38/0
SA-AAQ		44.87	8600.13	0.83	0.001
BAFT		66.07	9478.13	0.85	0.001
CFQ		24.30	884.08	0.68	0.001
SPAI	12th session using four prior assessments	2.04	2964.04	0.93	0.001
BFNE		25.47	1307.29	0.69	0.001
WHOQoL		11.22	1750.75	0.50	0.006

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up means revealed no significant difference between the two groups for WHOQoL (F=1.31, P=0.26). Examination of the scores on the subscales of WHOQoL using MANCOVA at post-test and follow-up only indicated a significant difference between the two groups in terms of the mental health subscale. Overall, the results indicated that ACT significantly increased the WHOQoL of patients, especially their mental health.

The results showed significant differences between the two groups in the post-test and follow-up (P=0.001) mean scores on the SA-AAQ. MANCOVA results also showed a significant difference between the two groups in acceptance (P=0.001), nonjudgmental experience (P=0.001), and action (P=0.02 and P=0.002 in the post-test and follow-up, respectively) in the post-test and follow-up.

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According to the results, there was a significant difference between the two groups in the mean scores of BAFT (P=0.001) and CFQ (P=0.001) in the post-test and follow-up. The two groups showed significant differences in the scores on the three BAFT subscales using MANCOVA (P=0.001). Overall, examination of the post-test and follow-up scores of the two groups indicated that ACT significantly reduced BAFT, physical worry, emotion regulation, negative evaluation, and cognitive fusion in the intervention group compared to the waiting list group.

The results showed no significant difference between the two groups in the mean score of VLQ in the post-test (P=0.46) and follow-up (P=0.48). The two groups showed a significant difference in the two subscales of the VLQ only in terms of their post-test and follow-up scores on the importance of the values domain (P=0.01 and P=0.03 in the post-test and follow-up, respectively). The results indicated that the intervention did not significantly increase valued living, and the only increase in the intervention group compared to the waiting list group was in the importance of values domain (Table 3).

As seen in Table 4, the results of the contrast tests of repeated measures showed that the difference in the SA-AAQ, BAFT, and CFQ scores occurred after the third session. However, the difference in the SPAI and the BFNE scores occurred after the sixth session, and the difference in the WHOQoL scores occurred after the twelfth session. As a result, given that changes in the mechanisms of change have occurred before outcomes, it can be concluded that the acceptance and action of social anxiety and cognitive fusion play a mediating role in the severity of social anxiety, fear of negative evaluation, and QoL. Inter-subject effects of valued living showed that there was no significant difference between the time points (F=1.76, P=0.15, and eta squared=0.13). We conclude that the difference in the valued living of the clients during treatment was not significant.

4. Discussion

The study results indicated a significant difference between the two groups in the severity of social anxiety and fear of negative evaluation. This finding is consistent with some findings regarding the effectiveness of ACT in reducing the severity of social anxiety (Block & Wulfert, 2000; Ossman et al., 2006; Dalrymple & Herbert, 2007; Vander Lugt, 2011; England et al., 2012; Yuen et al., 2013; Kocovski et al., 2013; Niles et al., 2014; Craske et al., 2014; Hancock et al., 2018; Toghiani et al., 2019). However, there are differences between

the present and previous studies. For example, we used the individual form of intervention, but in most previous studies, it has been used in a group format. In addition, we used the protocol proposed by Eifert and Forsyth (2005) for anxiety disorders. The mechanisms of change in ACT could be explained by the fact that the major therapeutic focus of ACT is on improving psychological flexibility to increase effective functioning in daily activities. Psychological flexibility, in a sense, is a skill that includes psychological acceptance, cognitive defusion, mindful contact with the current experiences, self as context, specification of values, life directions, and valued actions (Hayes, 2016). As a result, this research provides further evidence for the effectiveness of ACT on SAD.

According to the results of this study, there was a significant difference between the two groups in their scores on the WHOQoL mental subscale. This result is consistent with the findings in patients with SAD (Dalrymple & Herbert, 2007; Yuen et al., 2013). However, these two studies used the QoL questionnaire that assesses the respondent's satisfaction with several domains, including health, friendship, and work (Frisch, 1998), but in the present study, the WHOQoL was used. Acceptance of painful internal experiences, valued activities, and psychological flexibility is necessary for psychological flexibility as a construct that leads to improvement in QoL (Kashdan et al., 2009). When a person devotes a great deal of time and energy to avoiding painful internal experiences, their contact with the present moment experiences is reduced, and this makes them unable to act according to their personal values (Hayes et al., 2006). It seems that this therapy, with its emphasis on the important role of personal values and behavior-values compatibility, can lead to improvement in QoL.

The results indicated significant differences between the two groups in the scores of the SA-AAQ and its subscales. This finding is consistent with other studies (Dalrymple & Herbert, 2007; Kocovski et al., 2013; Niles et al., 2014) and inconsistent with that of Vander Lugt (2011). Inconsistency between the present study and the research conducted by Vander Lugt could be due to sample characteristics because the mentioned study used a sample with a different disorder. One of the main differences between the present study and the research by Kocovski et al. (2013) is that we used the SA-AAQ that more accu-rately assesses the change in acceptance over time. Previous research has not accurately determined whether the first outcome occurs or the mediator. We used a timeline method to determine mediators. In the intervention group, SA-AAQ played a mediating role in the severity of social anxiety and QoL. By examining

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the therapeutic protocol used, the cause of this change was identified in the first sessions. The purpose of this protocol is to provide an acceptance context in early sessions. The goal of Eifert and Forsyth's pro-tocol (2005) is to create a context for acceptance of the therapy in the initial sessions. The present study was the first research that used a longitudinal method and showed the role of mediation in social anxiety-acceptance and action. More research is needed to confirm this observation.

There were significant differences between the two groups in the scores CFQ and BAFT and its subscales. This finding is consistent with that of England et al. (2012). However, they used the Drexel defusion scale (DDS), which has a long manual, that explains cognitive diffusion that can influence the respondents' answers and involves imaginary and unreal situations. Cognitive diffusion interventions, like "saying thoughts loudly in a funny voice" or "labeling thoughts as thoughts" have been designed to reduce the regulatory function of thoughts through altering their contents. The "milk, milk, milk" practice can reduce distress and believability of thoughts (Masuda et al., 2004). Looking at the therapy protocol reveals some similar points.

The present study was the first research, in which the CFQ and the BAFT were used to assess patients with SAD. BAFT assesses the believability of thoughts and feelings and has been developed specifically for anxiety disorders (Herzberg et al., 2013) and CFQ provides a more comprehensive definition for fusion (Gillanders et al., 2014). Therefore, it can provide a more accurate assessment compared to other tools. The present study was the first research that used a longitudinal method and showed the mediation role of cognitive fusion in the severity of social anxiety and QoL.

The study results indicated no significant difference between the two groups in VLQ total score and consistency section. This finding is in contrast with the ACT model, in which people are encouraged to engage in valued behaviors without trying to reduce their anxiety (Hayes et al., 1999) and previous research (Ossman et al., 2006; Dalrymple & Herbert, 2007; Kocovski et al., 2013). In this therapy, clients learn to choose willingness to experience thoughts and feelings to become committed to valued behaviors (Strosahl et al., 2004). However, a review of the results showed that there was a significant difference between the two groups in the importance section of VLQ, whereas there was no difference in the consistency section of VLQ. This inconsistency could be attributed to VLQ as this questionnaire has some disadvantages (for example, answers to items are qualitatively interpreted). Furthermore, the test re-test reliability esti-

mates for the domains of the importance of values and behavior-values compatibility are not very high, and this could have also influenced the study results (Wilson et al., 2010). Individual differences among the patients, degree of practice outside the therapy sessions, and comorbid disorders may have also affected the results. Future studies can clarify these issues.

One of the limitations of the present study was a short follow-up period; therefore, future studies are suggested to use longer follow-up periods to increase the generalizability of the results. Another limitation of the present study was the small sample and future studies are suggested to use larger samples from different populations. Finally, our patients had axis I comorbidity and avoidant personality disorder. In general, our results support the effectiveness of ACT for SAD and highlight the mediator contributions of social anxiety-acceptance and action and cognitive fusion in SAD.

Ethical Considerations

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