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Title: Effectiveness of Acceptance Commitment Therapy (ACT) in Social Anxiety Disorder: Application of a Longitudinal Method for Evaluation of Mediation Role of Acceptance, Cognitive Fusion and Values

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Abstract

Objectives: The purpose of the current study was to examine the effectiveness of ACT on symptom severity, fear about negative evaluation, quality of life and mediation 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), WHO Quality of Life (WHOQOL), Social Anxiety - Acceptance and Action Questionnaire (SA-AAQ), Cognitive Fusion Questionnaire (CFQ) and Valued Living Questionnaire (VLQ) were administered before, immediately after, and at one month follow up. Repeated measurement design was used in the intervention group to investigate the changes of mediation and outcomes variables in the pretest, during, and post- therapy. Twenty-four patients completed the study. One-way analysis of covariance, Multivariate analysis of covariance and repeated measures was used for analysis.

Results: Results showed that there were differences between the intervention and waiting list groups on the severity of symptoms ($p=0.001$), fear of negative evaluation ($p=0.002$), and quality of life ($p=0.03$), as well as in terms of specific measures of SA-AAQ($p=0.001$), cognitive fusion ($p=0.001$), and important section of VLQ($p=0.001$). Repeated measurement result showed that acceptance and action of social anxiety and cognitive fusion had a mediating role in the severity of anxiety, fear about negative evaluation, and quality of life.

Discussion: Results of the study indicate the effectiveness of ACT for SAD and highlighted mediator contribution acceptance and action and cognitive fusion in severity of social anxiety

Keywords: Acceptance and commitment therapy, Social anxiety disorder, Social anxiety acceptance and action, Cognitive fusion, Valued living

Introduction

Social anxiety disorder (SAD) refers to intense fear or anxiety in social circumstances 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). new neuroscience approach to understanding the formation and maintenance of SAD shows that behavioral inhabitation and temperament are risk to develop SAD in young children (Fox & Kalin, 2014). Moreover, brain regions like the central nucleus of the amygdala, orbitofrontal cortex and anterior hippocampus 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 have residual symptoms and problem after treatment. Moreover, many 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 with the situations and stimulants that provoke anxiety in anxiety disorders (Eifert & Forsyth, 2005). Eifert and Forsyth(2005) stated that researchers had recently focused on a more general form of anxiety, termed as experiential avoidance (EA). EA is defined as trying to avoid of feelings, thoughts, memories, and somatic 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 affect 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 of behavioral therapy has been developed within behavioral and cognitive approaches. Some researchers suggest a new generation of

psychotherapists termed as ACT (Hayes, Strosahl & Wilson., 1999; Hayes, 2016) that has been inspired by the development of cognitive neuroscience (Naji & Ekhtiari, 2016).

ACT is a third generation of psychotherapy that targets to encrease 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, Ghasemi & Samouei, 2019). However, studies have not examined the mechanism of change of ACT in SAD using longitudinal method and proper instruments so far. Previous research has used the Acceptance and Commitment Questionnaire (AAQ-II) or the cognitive fusion measurement that are not suitable (Gillanders et AL., 2014). The goal of the present reaearch was to nomination the effectiveness of ACT in improving social anxiety, fear of negative evaluation and quality of life of patents 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 longitudinal method. Given the popularity of ACT and special attention to mind and linguistic issues such as cognitive fusion, we decided to investigate the mediation role of acceptance and action, cognitive fusion, and valued living in the severity of social anxiety, fear about negative evaluation and quality of level of life of SAD.

Materials and Methods:

In the present study, a pretest-posttest design with a control group was used. Gall, Borg, Gall (1996) stated that the sample size in interventional studies must be at least 15 subjects for each group. In total, thirty patients diagnosed with SAD were selected from those attending the psychology clinic of Taleghani Hospital (located in Tehran, Iran) from July to January (2015) and assessed using the Anxiety Disorders Interview program for DSM-IV (Brown, Di Nardo, & Barlow, 1994) and the Structured Interview for DSM-IV Axis II Disorders (First et al, 1997). Interviews were conducted by a clinical psychologist (two holders of Ph.D. in clinical psychologist). Patients with main diagnosis of SAD and comorbidities, such as anxiety and mood disorders as the secondary diagnosis (not primary), were included in current study. They were randomly allotment into two interventions (n=15) and waiting list groups (n=15). Ten subjects

were diagnosed with comorbid mental disorders (%42), Four of them 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 as avoiding personality disorder (21%). The mean age of the intervention group was 27.25 (SD=7.22) years and that of the control group was 26.75 (SD=5.42) years. Five subjects of intervention and seven of the control group were female. Diagram of patients is placed in Figure 1. The patients were not screened in past or current 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 acceptance to give informed consent for participation in the reasearch. 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; lack of will to participate in the research; 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 course of ACT (near of 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.

Table 1. Summary of therapy sessions

Session1	Psychoeducation and familiarity with the therapy process.
session 2	Setting the stage for accepting the therapy, and analyzing the cost-benefits of the previous control attempts.
session 3	Setting the stage for accepting the therapy, creative hopelessness, making room for new solutions.
session 4	Acceptance and valued living as alternatives for anxiety management: mindfulness, acceptance, and value selection.
session 5	Acceptance and valued living as alternatives for anxiety management: getting close to personal values through acceptance and self-observation.
session 6	Developing a flexible behavior pattern though value-based exposure.
sessions 7 to 11	Staying committed to personal values and actions.
session 12	review Review of previous sessions, getting ready for relapse and failure, and identifying the high-risk situations.

We used a longitudinal method for the intervention group to investigate the mechanisms of change of ACT. The most common limitation for clinical trials is failure to establish a timeline between the proposed mediator or the mechanism of change and outcome. In this method, 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 follow up (one month after therapy) for both groups. All questionnaires were completed by the subjects in the pre-test, third, sixth, ninth and twelfth sessions in the intervention group.

This research was registered with the code of IR.SBMU.MSP.REC.1394.13 by Shahid Beheshti University of Medical Sciences(Ethics committee). Informed consent was obtained. Then, main measures were administered for the patients. The outcome variables were social anxiety

symptoms, fear of negative evaluation and quality of life. The process variables are acceptance and action, cognitive fusion, and valued action.

Table 2. Mean and Standard Deviation of outcome and process variables in posttest and follow up

	Intervention Group						Control Group					
	Pretest		Posttest		Follow up		Pretest		Posttest		Follow up	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
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

Note: The Social Phobia and Anxiety Inventory (SPAI), Brief Fear of Negative Evaluation(BFNE), WHO Quality of life(WHOQOL), Social Anxiety - Acceptance and Action Questionnaire (SA-AAQ), Believability of Anxious Feelings and Thoughts(BAFT), Cognitive Fusion Questionnaire (CFQ), Valued Living Questionnaire (VLQ). Mean(M) and standard deviation(SD)

Measurements

ADIS-IV(Brown, Di Nardo, & Barlow, 1994): This structured interview is designed to assess the of anxiety disorders. It includes diagnostic and differential sections for all anxiety disorders. In addition, some parts of it assess the mood, somatoform, and substance use disorders because these conditions have a high comorbidity with anxiety disorders, and their symptoms are usually similar to those of anxiety disorders. Expect for Dysthymia, diagnosis of psychological disorders using the ADIS-IV has shown good to excellent (from .67 to .86) inter-rater reliabilities (Brown et al, 1994).

SCID-II: This semi-structured interview is designed to assess the personality disorders. It has been designed for assessing 10 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 .53 for the interview among psychiatric patients. The retest reliability coefficient of SCID-II was 0.87 and face and content validity was proper in Persian version(Bakhtiari, 2000).

Social Anxiety - Acceptance and Action Questionnaire (SA-AAQ): This questionnaire is designed to assess acceptance related to social anxiety symptoms and the level of awareness about thoughts and feelings about related to social anxiety without trying to alteration them. SA-AAQ has good reliability and validity with other constructs(MacKenzie and Kocovski 2010). The results from factor analysis of SA-AAQ in Iran yielded three factors and was correlated between SA-AAQ and with the other constructs. Cronbach’s alpha and test-retest coefficients of SA-AAQ was 0.84 and 0.84, respectively (Soltani et al., 2016).

Believability of Anxious Feelings and Thoughts Questionnaire (BAFT): This questionnaire was created to assess cognitive fusion in anxiety disorders and tendency toward fusion with anxious feelings and thoughts. It has sixteen questions that are scored based on Likert type. It assesses beliefs and not the intensity of the symptoms. BAFT reliability and Validity was good in non-clinical and clinical sample (Herzberg et al 2012). Factor structure of the questionnaire consists of negative evaluation, somatic concerns and emotion regulation. 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 population. Besides, retest 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. Cronbach's alpha and test-retest coefficients of BAFT was 0.82 and 0.81, respectively(Soltani et al, 2016.b).

CFQ: current measures was created by Gillanders et al. (2014). It has seven questions that are scored on a Likert scale. Higher scores are indicator of higher fusion. Gillanders et al. (2014) conducted a study on different sets of samples and found a good evidence on the adequacy of reliability and validity. A four-week retest 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. Cronbach's alpha and test-retest coefficients of BAFT was 0.86 and 0.86, respectively(Soltani et al., 2016.b).

The Social Phobia and Anxiety Inventory (SPAI): This inventory has 45 items and 2 subscales, including social phobia and agoraphobia. Among the 45 items, 32 are about social phobia and 13 about agoraphobia. Turner et al. (1989) found a two-week test-retest 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. Cronbach's alpha and test-retest coefficients of SPAI was 0.97 and 0.99, respectively(Boland nazar, 2001). In the present study, the 32 items which assess social phobia were used.

The Brief Fear of Negative Evaluation (BFNE) scale: This was developed by Leary (1983). It has 12 items assessing the respondent's experienced anxiety about negative evaluation. Leary (1983), in a study on students, showed good reliability and validity for BFNE. The results of Cronbach's alpha 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 to assess valued living (Wilson, Sandoz and Kitchens 2010). In the first section, in a Likert-type scale, the participants arranged ten life domains in order of importance. The second section of this VLQ asks the respondents to rate on a Likert-type scale how consistently they have lived during the previous week according to this values in every domain of life. reliability and validity of VLQ were reported good (Wilson et al., 2010). Cronbach's alpha and test-retest coefficients of SPAI was 0.84 and 0.89, respectively (Soltani et al, 2016).

WHO Quality of Life (WHOQOL): This questionnaire assesses four domains of quality of life: social relationships, environment, psychological and physical health. WHOQOL group (1996) approves its use to many countries of the world. The validity and reliability of the Iranian version of WHOQOL indicate it can be used in Iran (Nejat et al, 2004).

Statistical analysis

Univariate analysis of covariance (ANCOVA) and multivariate analysis of covariance (MANCOVA) and Repeated measures used for analysis by SPSS software v.16.

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 posttest and follow-up scores on the study variables. The results indicated a significant difference of groups in the mean of SPAI ($p=0.001$) and BFNE at 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 (0.005). However, because the data are normally distributed, and given that the analysis of covariance is resistant to violation of this assumption, and there is no nonparametric test equivalent to this analysis, we used analysis of the variance of posttest means which indicated a significant difference between the two groups in WHOQOL ($F=4.08$, $p=.05$), but analysis of the variance of follow-up means revealed no important difference between groups in WHOQOL ($F=1.31$, $p=.26$). Examination of the scores on the subscales of WHOQOL using multivariate analysis of covariance at posttest and follow-up only indicated a significant difference in mental health subscale. Overall, the results indicated that ACT significantly increased the WHOQOL of patients, especially their mental health.

The study results showed differences between groups in the mean of the posttest and follow-up ($p=0.001$) scores on the SA-AAQ. Multivariate analysis of covariance also showed a significant difference in acceptance ($p=0.001$), nonjudgmental experience ($p=0.001$), and action ($p=0.02$ in posttest, $p=0.002$ in follow-up) at the posttest and follow-up.

According to the results, there was difference in BAFT($p=0.001$) BAFT subscales($p=0.001$). And CFQ($p=0.001$) at the posttest and follow-up. Overall, examination of the posttest 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.

The results showed no significant difference in VLQ at the posttest ($p=0.46$) and follow-up ($p=0.48$). Examination of the posttest and follow-up scores on the two subscales of the VLQ also indicated a significant difference only in terms of their posttest and follow-up scores on the importance of values domain ($p=0.01$ in posttest, $p=0.03$ in the follow-up). The results indicated that the intervention did not significantly increase valued living, and the only increase was seen in the intervention group in the importance of values domain.

As seen in Table 3, the results of the contrast tests of repeated measures showed that the difference in SA-AAQ, BAFT and CFQ occurred after the third session. However, the difference in the SPAI and the BFNE occurred after the sixth session and difference in WHOQOL occurred after the twelve session. As a result, given that changes in the mechanisms of change have occurred before outcomes, it can be concluded that the acceptance of social anxiety and action, cognitive fusion play a mediating role in the severity of social anxiety, fear of negative evaluation and quality of life. Inter-subject effects of valued living showed that there was no significant difference between the time periods (F value = 1.76, significance 0.15 and eta squared 0.13). Difference in valued living of the clients during treatment was not significant.

Table 3. MANCOWA of subscales and ANCOVA of variables

Variable	Time	MS	F	P-Value	Eta
SA-AAQ	Posttest	13594.01	50.13	0.001	0.70
	Follow up	15515.20	124.86	0.001	0.88
Acceptance	Posttest	1773.6	29.8	0.001	0.61
	Follow up	2340.74	123.38	0.001	0.89
Non-judging of experience	Posttest	2244.8	57.6	0.001	0.75
	Follow up	2327.74	155.71	0.001	0.91
Action	Posttest	368.4	6.50	0.02	0.25
	Follow up	346.50	15.37	0.002	0.52
CFQ	Posttest	2058.4	60.6	0.001	0.74
	Follow up	2578.15	91.22	0.001	0.85
BAFT	Posttest	18871.3	256.2	0.001	0.92
	Follow up	15656.72	158.02	0.001	0.90
Somatic Concerns	Posttest	2690.4	120.2	0.001	0.86
	Follow up	2148.72	59.77	0.001	0.81
Emotion Regulation	Posttest	955.2	45.6	0.001	0.70
	Follow up	1035.86	80.33	0.001	0.85
Negative Evaluation	Posttest	1596.5	240.8	0.001	0.92
	Follow up	1044.08	130.57	0.001	0.90
VLQ	Posttest	135.96	0.54	0.46	0.02
	Follow up	177.78	0.50	0.48	0.03

VLQ-Important	Posttest	360.35	0.8	0.01	0.28
	Follow up	504.85	5.23	0.03	0.25
VLQ-Consistency	Posttest	39.76	0.27	0.60	0.01
	Follow up	80.50	0.42	0.52	0.02
SPAI	Posttest	41589.63	7.61	0.001	0.77
	Follow up	3712.04	49.60	0.001	0.74
BFNE	Posttest	1667.2	3.52	0.002	0.62
	Follow up	1176.18	14.05	0.002	0.47
WHOQOL	Posttest	790.9	4.81	0.03	0.14
	Follow up	246.15	1.62	0.21	0.09
WHOQOL- Physical Health	Posttest	71.04	3.79	0.06	0.17
	Follow up	19.26	1.31	0.27	0.09
WHOQOL- Psychological	Posttest	58.49	4.44	0.04	0.19
	Follow up	65.32	4.48	0.05	0.25
WHOQOL- Environment	Posttest	50.9	2.85	0.10	0.13
	Follow up	18.61	1.54	0.23	0.10
WHOQOL-Social Relationship	Posttest	18.42	3.48	0.07	0.16
	Follow up	3.28	.58	0.46	0.04

Table 4. Inter subject effects for mediator and outcome variables in intervention group (ACT)

Variable	Time	F	MS	Eta	P Value
SA-AAQ	Third session with pre-test	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		1.41	864.73	0.11	0.26
BFNE		4.34	96.33	0.28	0.06
WHOQOL		4.07	385/33	0.27	0.06
SA-AAQ	Sixth session with two previous Assessment	36.94	12416.33	0.77	0.001
BAFT		62.77	12838.02	0.85	0/001
CFQ		11.42	1200.00	0.50	0/006
SPAI		27.49	23598.63	0.71	0/001
BFNE		15.33	1260.75	0.58	0/002
WHOQOL		0.24	60.75	0.02	0/63
SA-AAQ	Ninth Session with Three Prior Assessment	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		85.07	33132.77	0.88	0.001

BFNE		24.89	1518.75	0.69	0.001
WHOQOL		3.50	385.33	0.24	0/38
SA-AAQ	Twelve Session with Four Prior Assessments	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		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

Discussion

The study results indicated difference between in severity of social anxiety and fear of negative evaluation. This result is consistent with the number of previous research 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 group format. In addition, we used the protocol proposed by Eifert and Forsyth (2005) for anxiety disorders. The mechanisms of change in ACT could due to the fact that the major therapeutic emphasize of ACT is about improving psychological flexibility to increase effective functioning in daily activities. Psychological flexibility, in a sense, is a skill that includes psychological willingness cognitive de-fusion, mindful contact with the current experiences, self

as context, specification of values, life directions, and valued actions(Hayes, 2016). As a result, this study provides further evidence for the application of ACT on SAD.

According to the results of current research, there was a significant difference in WHOQOL and their scores in the mental subscale. This result is consistent with the findings in patients with SAD(Dalrymple & Herbert ,2007; Yuen et al., 2013). However, the two studies used the Quality of Life(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 are necessary for psychological flexibility as a construct that leads to improvement of QOL(Kashdan, Morina & Priebe, 2009). When a person devotes a great deal of time and energy to avoid 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 of QOL.

The study results indicated significant differences between the two groups in SA-AAQ and its subscales. This finding is consistent with those of some 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 Vander Lugt (2011) used a sample with a different disorder. One of the main differences between the present study and Kocovski et al.'s (2013) is that we used the SA-AAQ that more accurately 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 anxiety about social condition and quality of life. By examining the therapeutic protocol used, we found that 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 the Eifert and Forsyth's protocol (2005) is to create a context for acceptance of the therapy in the initial sessions. The present study was the first research that used longitudinal method and showed the role of mediation in social anxiety- acceptance and action. More research is needed to confirm it.

The study results indicated differences in 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)

that has a long manual, explains cognitive defusion that can influence the respondents' answers, and involves imaginary and unreal situations. Cognitive defusion 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, 2003). 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 severity of social anxiety and quality of life.

The study results indicated no significant difference between the two groups in VLQ total score and consistency part. This findings is in contrast with ACT, in which people are encouraged to involve in valued behaviors without trying to decrease their anxiety (Hayes et al, 1999) and previous research (Ossman et al., 2006; Dalrymple and 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). Of course, a review of the results showed that there was difference in the importance section of VLQ, but there was no difference in the consistency section of VLQ. This inconsistency could be attributed to VLQ. This questionnaire has some disadvantages (for example answers to items are qualitatively interpreted). Furthermore, the test-retest reliability estimates 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 limitation 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. next limitation of the current research was the small sample; future studies are suggested to use larger samples from different populations. Finally, our patients had comorbidity on I axis and avoidant personality disorder. In general, results from the study support the effectiveness of ACT for SAD

and highlight the mediator contributions of Social Anxiety - Acceptance and Action and Cognitive Fusion in SAD.

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Conflict of interest:

No conflict of interest

Ethical Approval

Current research was registered with IR.SBMU.MSP.REC.1394.13 code by Shahid Beheshti University of Medical Sciences.

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Figure 1. The participants' flow diagram