

# The Effect of Cognitive-Behavioral Group Therapy on Anger and General Health of Female Students in Iran: A Pilot Study

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## Abstract

**Background:** There is a growing body of literature in favor of cognitive therapy on anger in the world.

**Objectives:** The aim of the present study was to evaluate the efficacy of cognitive-behavioral group therapy in the reduction of state-trait anger and increase of general health among female students of Khorasgan Azad University, Isfahan.

**Materials and Methods:** This study was a quasi-experimental research. A number of 40 students from the humanity sciences faculty of Khorasgan Azad University, who accepted the invitation to the study, were selected and randomly assigned to the experimental (n = 20 participants) and control (n = 20 participants) groups. The group therapy, based on Reilly & Shropshire's model (2000), was held in 8 weekly sessions at Khorasgan Azad University. The participants were asked to fill out the Spielberger's state-trait and general health questionnaires in the pre-test, post-test and follow-up test (6 months later).

**Results:** The results of multivariate analysis of covariance (MANCOVA) showed a significant difference between the groups in the mean scores of state anger, anxiety, social dysfunction, depression, and general health in the post-test ( $P < 0.05$ ). However, there was not a significant difference in the mean scores of trait anger and somatic symptom in this stage. In the follow-up stage, there was a significant difference in all the variables between the two groups ( $P < 0.05$ ).

**Conclusions:** Cognitive-behavioral group therapy could be an appropriate approach in decreasing anger and improving general health among female students.

**Keywords:** Cognitive-Behavioral Group Therapy, General Health, State-Trait Anger

## 1. Background

Anger is one of the emotional and affective states that may become problematic to the individual and hence, requires therapeutic intervention (1, 2). There is a growing body of literature documenting an association between high levels of anger and mental-physical health problems (3). The maladaptive effects of anger are traditionally emphasized as a major contributor to the etiology of depression and anxiety (4). Anger and unacceptable aggressive thoughts leading to a fantasy punishment are viewed as a potential cause of anxiety (5).

There is a documented association between maladaptive anger and hypertension (6) as well as cardiovascular disease (7-9). Anger is linked to depressive illness although it is not clear whether maladaptive anger is a precursor or a by-product of depression (10). Anger can have a negative impact on interpersonal relations (11). High-anger individuals normally report more conflict with friends (12), have less social support (13), and are less satisfied with their current job and change their job more frequently (12).

Over last decades, there have been several classifica-

tions of anger. One of the most famous ones, receiving high experimental support and acceptance, is Spielberger's classification. According to the Spielberger's theory, a distinction between two types of anger (state-trait) is necessary (1).

Trait anger refers to an individual's overall propensity to become aroused to anger as a stable aspect of the personality over a long term (14). Spielberger (1983) hypothesized that persons scoring high on trait anger tend to perceive a wide range of situations as anger-provoking (e.g. annoyance, irritation, and frustration). State anger refers to emotional experience at a particular moment, consisting of subjective feelings of tension, annoyance, irritation, and rage with concomitant activation or arousal of the autonomic nervous system (4, 15).

One important issue in anger research is concerned with the role of demographic factors such as gender and marital status in severity and prevalence of anger. Studies examining the intensity and expression of anger do not consistently support the stereotype of anger as a typically male emotion. Moreover, if any differences are found, as

is the case of some studies, it is because women are reported more anger than men (16-18). In addition, the interpersonal context of these situations differs widely and may include situations with close others; especially in couples who might have a conflict related to their marriage. Such features of social context may appear to be crucial as they may render gender-specific expectancies and traits more or less salient and there might be differences in causes of anger between a single and married female (19, 20).

Most current definitions regard anger as a multidimensional construct (21). The most of interventional researches in anger has focused on anger (as a general construct) (22), violence (23), and aggression (24). However, the best classification of anger is the state-trait anger (25). Concerning the above mentioned material and striking cognitive aspects of anger, cognitive-behavioral therapies have been efficient for decreasing anger problems and remained numerous experimental evidences (26). The aim of this study was to investigate the efficacy of cognitive-behavioral group therapy in state-trait anger and general health of single female students.

## 2. Objectives

Therefore, we intended to study the effect of cognitive behavioral group therapy on state-trait anger and general health (and its subscales) among female students in Isfahan, Iran.

## 3. Materials and Methods

### 3.1. Participants

This study was a quasi-experimental trial that was conducted using two groups of experimental and control. The measurements were carried out in three stages of pre-test, post-test, and follow-up (6 months after the pre-test). The population of this research consisted of all female university students studying at Azad University, Khorasgan branch, Iran in 2009 - 2010. The sample was chosen according to purposeful sampling. Among all faculties of the university, the faculty of humanity sciences was selected; having designed a call for female volunteers who were in line to participate in the study. Among all the primary participants, 40 students who had anger management problems (according to a brief clinical interview) were chosen and randomly assigned to the experimental group (n = 20) and control group (n = 20). Two groups were paired of educational and marital status (both groups were undergraduate and single females). The mean and standard deviation of age of participants were  $19.55 \pm 2.23$ . In the sample selection, below criteria were considered:

Inclusion criteria: 1) Being undergraduate student. 2) Being single.

Exclusion criteria: diagnosis with psychotic disorders (consisted of schizophrenia and bipolar disorders).

The group therapy was conducted based on cognitive model of Reilly & Shropshire (27). The participants attended 8 sessions over an 8-week period. Spielberger's state-trait anger questionnaires were given to both groups in the pre-test, post-test, and follow-up. Four participants (two participants in each of experimental and control groups) were excluded from the study because they missed 3 sessions. To appreciate participants in the control group, after follow-up, 8 weekly sessions on anger management were held for the control group.

### 3.2. Interventional Program

The program was based on the Riley and Shropshire anger management manual (27). The focus was on arousal control, which was retaining attention to bodily arousal. Individuals were trained to scan their body tensions and use techniques such as deep breathing and relaxation. Life style issues on stress reduction were also discussed. Other techniques such as anger meter were also practiced and given to individuals as homework.

Once arousal was reduced, there was a shift to cognition and appraisal. The first emphasis was on making a realistic appraisal of the situation that was carried out through giving a list of cognitive errors and evaluation of the automatic thoughts. Then, it led to either problem solving approach if the automatic thought is correct or re-statement of automatic thought if it was wrong based on the list of cognitive errors. The next part of anger management emphasized on interpersonal relationship. Sessions on assertiveness skills were also held. There was a great emphasis on homework assignments; group members were trained to recognize their cognitive errors (e.g. mental filtering, personalization, etc.) and use evidence testing as well as re-statement of new thoughts. The next level included intermediate belief that must be modified and the final level included the core belief that was the deepest level of thought. There was also modification on core belief, as the deepest level of thought. Assessment and screening for entering the program were also considered. A large number of students suffering from anger problems with a great impact on life style and interpersonal relationship were chosen. Therefore, our screening included the aspects of anger in their life style and their relationship. They were skilled to make connections between physical arousal, cognitions, and feelings for CBT approach and to promote their eagerness to reduce anger and aggression.

### 3.3. Instruments

Spielberger's anger questionnaire (STAXI-2): The first version of this questionnaire was developed by Charles Spielberger in 1988 that was later revised, expanded, and published in 1999. It is a 57-item inventory that measures the intensity of anger in 6 subscales. In the present study, the two subscales of state anger and trait anger were used. Cronbach's alpha (internal consistency) for trait anger and state anger were obtained as 0.87 and 0.93, respectively. The mean test-retest reliability value was determined as 0.77 (4).

General health questionnaire (GHQ-28): The original test was first developed in 1972 by Goldberg. It assesses the respondent's current state and asks if the current state differs from his or her usual state. GHQ-28 was compiled by Goldberg and Hillier in 1979 through factor analysis from the 60-item version and then divided into four sub-scales, each containing seven items, as follow: A somatic symptoms (items 1 - 7), B anxiety/insomnia (items 8 - 14), C social dysfunction (items 15 - 21), and D severe depression (items 22 - 28). To assess the internal consistency, 116 Iranian students were tested with GHQ-28 and yielded the Cronbach's alpha internal consistency of 0.91 (28). Also, Noorbala, Bagheri, and Mohammad (2009) (29) obtained a test-retest coefficient of 0.91 and cut-of-point score of 24 in an Iranian population.

### 3.4. Statistical Analysis

The data was analyzed with spss-16 software. To compare the mean scores of variables between two groups, we used multivariate analysis of covariance (MANCOVA), to control the effects of pre-test scores on the post-test and follow-up test scores.

## 4. Results

The results have been reported in descriptive statistics in Table 1. The results of testing assumptions of the study using inferential statistics are presented in Table 2.

### 4.1. Descriptive Findings

The descriptive statistics (mean and standard deviation) of variables including trait anger, state anger, somatic symptoms, anxiety, social relation, and depression are presented in Table 1.

### 4.2. Statistical Assumptions

To investigate the assumption of normal distribution of scores, the Shapiro-Wilks test was employed. Overall, normality of the data was approved by Shapiro-Wilks test except for the scores of depression.

The results of Levene's test for investigating the equality of variances in the two groups showed that except for the variables of depression and general health in the follow-up stage, the assumption of equal variances was approved for all the other variables.

In order to investigate the assumption of equal covariance, Box's M test was used. The results showed that with an exception of two variables including depression and general health, the assumption of equal covariance was confirmed for the other variables.

Considering the fact that the assumptions of normal distribution of scores, equal variances, and equal covariance are met for most of the variables, and the fact that the sample size is equal in both groups, using parametric tests is permitted.

### 4.3. Inferential Findings

The results of multiple analysis of covariance (MANCOVA) on the mean scores are presented in Table 2.

As Table 2 shows, except for the post-test mean of trait anger and social relations, there are significant differences in the scores of other variables between the post-test and follow-up stages.

## 5. Discussion

We aimed to investigate the efficacy of CBGT on state-trait anger and general health of single female academic students. In this section, we will discuss the research findings.

The results presented in table 2 shows that there was a significant difference between two experimental and control groups in the mean scores of state anger in the post-test and follow-up stages. As well as, there was a significant difference in the mean score of trait anger in the follow-up stage. Also, there was not a significant difference in the mean scores of trait anger between the two groups in the post-test. The early interventional researches mostly have been focused on anger (22) and aggression (24) and we could not find similar researches in trait-state anger. Explaining the lack of efficacy of CBGT in the post-test and follow-up is presented as follows. As Spielberger's state-trait anger expression inventory describes, trait anger roots more in ones' personality and is less affected by environmental factors (unlike state anger) (4). Therefore, reducing trait anger needs more time in comparison with state anger. Using anger management techniques and performing cognitive models need more time and regular practice in real everyday life. However, the results have changed in the follow-up test. A similar pattern for state-trait anger was also observed in case of anxiety

**Table 1.** Mean and Standard Deviation of Variables

Group	Experimental						Control					
	Pretest		Posttest		Follow-up		Pretest		Posttest		Follow-up	
	mean	SD	mean	SD	Mean	SD	mean	SD	mean	SD	Mean	SD
Trait anger	25.05	5.89	21.61	5.25	22.00	4.85	23.16	4.96	23.27	5.68	25.16	5.94
State anger	31.83	12.96	24.22	9.99	22.38	5.59	26.22	10.54	28.88	12.34	25.55	6.36
Somatic symptom	7.16	3.97	3.88	2.49	3.22	1.95	5.77	3.65	5.55	3.18	5.94	3.03
Anxiety	7.33	2.93	3.83	2.35	3.11	2.39	6.22	4.16	6.55	3.25	7.27	3.46
Social relation	6.66	3.08	5.66	1.78	4.61	2.27	7.96	3.67	0.05	5.73	4.00	2.67
Depression	4.66	5.93	1.55	2.66	1.05	1.36	4.38	4.34	4.66	5.04	25.96	11.24
Total	25.72	11.95	15.05	7.09	12.00	5.41	22.94	10.77	25.11	12.53	25.94	11.24

**Table 2.** Results of MANCOVA on the Mean Scores of Variables in the Post-Test and Follow-Up

	Index Variable	Sum of Squares	df	Mean of Squares	F	Size Effect	Power	P Value
Anger trait	Post-test	84.83	1	84.83	3.81	0.1	0.47	0.059
	Follow-up	137.11	1	137.11	5.51	0.14	0.25	0.025
anger state	Post-test	186.66	1	186.66	90.06	0.21	0.83	0.005
	Follow-up	186.06	1	186.06	7.01	0.17	0.72	0.012
Social relation	Post-test	36.18	1	36.18	4.3	0.1	0.49	0.053
	Follow-up	83.6	1	83.6	16.89	0.31	0.96	0.001
Anxiety	Post-test	89.06	1	89.06	14.81	0.31	0.96	0.001
	Follow-up	193.19	1	193.19	32.02	0.49	0.000	0.001
Social relation	Post-test	41.64	1	41.64	7.97	0.19	0.78	0.008
	Follow-up	108.83	1	108.83	14.58	0.3	0.96	0.001
Depression	Post-test	82.512	1	82.512	8.530	0.2	0.8	0.008
	Follow-up	80.668	1	80.668	22.631	0.497	0.996	0.001
Total	Post-test	1196.592	1	1196.592	18.555	0.36	0.987	0.001
	Follow-up	227.1995	1	227.1995	31.753	0.49	1.000	0.001

disorders. Anxiety is also classified into two types; state and trait. Disorders, which are mainly due to trait anxiety (like pervasive anxiety disorder), need more treatment time compared with disorders that are more related to state anxiety (like phobia).

As the results presented in Table 2 shows, there was a significant difference in the mean scores of state anger between two groups of experimental and control in the post-test and follow-up test. Regarding the fact that in the interventional sessions, we focused more on the negative thoughts (and less on core beliefs), the results on state anger -unlike those of trait anger- became meaningful in the post-test (having known that state anger mainly results from negative thoughts). Another explanation could be related to problem-solving techniques. Since female participants mostly rely on problem-solving techniques, which

are more emotional and reactive, such training helped them use problem-oriented approach and critical thinking to find solutions for problems provoking their conditions.

As the results in Table 2 shows, there was a significant difference in the mean scores of somatic symptoms between the experimental and control groups. Also, there was no significant difference in the mean scores between the two groups in the post-test, but a significant difference in the follow-up test ( $P = 0.001$ ). A similar pattern is also observed in the mentioned factor related to somatic symptoms and trait anger in the sense that in the post-test stage, no significant difference was observed, whereas in the follow-up stage, there was a significant difference.

A significant difference was also observed in the mean scores of anxiety between the experimental and control groups in the post-test and follow-up test. This result is con-

gruent with those of Meuldijk et al. (30). During initial sessions of therapy, it was observed that there was a reciprocal relation between anger and some parts of anxiety in the participants of this study, leading to a vicious circle; which meant that participants could not express their anger in an appropriate, sensible way probably due to a hidden social anxiety that prevents them from expression of anger. At the same time, lack of anger expression led to an immense increase in anger in their psychological system. This eventually resulted in the anger-expression out and turned to negative feedback, expulsion by others, and a decline in self-esteem. They would experience an intensified social anxiety during the sessions. During the therapy sessions, anxiety and distorted thoughts that had prevented anger expression were detected and replaced by more logical and functional thoughts (vicious cycle). On the other hand, assertiveness techniques were practiced in order to reduce negative feedback and recover self-esteem.

It was observed also a significant difference in the mean scores of dysfunctional social relations between the experimental and control groups in the post-test and follow-up test. The improvement revealed in social relations in the post-test stage and its continuation to the follow-up stage was occurred according to the following pattern:

Assertion → appropriate expression of anger → mood improvement → improvement in social relations.

One of the techniques used during the therapy was assertive skill aiming at enabling the participants to express their anger in an appropriate way. This helped them increase their self-esteem and efficacy and eventually help them elevate their mood as well as have a satisfactory inter-relationship. Having a successful social relationship leads to positive feedback and social reinforcements. This, in turn, fulfills the consistency of the results.

Another section of the results is about depression. There was a significant difference in the average scores of depression between the experimental and control groups in the post-test and follow-up test. This result is congruent with those of Haller et al. (31). One of the justified theories in relation to the causes of depression is the theory of locus of attribution. Depressed patients have internal, persistent locus of attribution that is close to cognitive distortion such as personalization and catastrophizing. An attempt was made to detect social distortions through which participants were trained to replace internal, stable attributions by an external, reflexive one. Hence, the results of the therapy in the post-test stage and its continuity in the follow-up stage could be justified.

The final section of the results relates to general health. There was a significant difference in the mean scores of general health between the experimental and control

groups in the post-test and follow-up. This result is congruent with those of Meuldijk et al. (30). General health is a construct that can be evaluated based on physical and psychological conditions of individuals including psychological distress (anxiety, depression, etc.), quality of social relations, and underlying physical symptoms (sleep and nutrition). There is an interesting match between this definition and GHQ-28 questionnaire used in the present study with four sub-scales of anxiety, depression, social relation, and physical symptom. On the other hand, anger as an emotion includes physical cognitive and emotional component. Therefore, concerning the previous results, the reduced anger led to an improvement in the physical and psychological condition and generally in the general health of the participants.

### 5.1. Conclusion

Concerning the results obtained in the present study and congruent research and due to significant cognitive components among female students with anger management problems, cognitive behavioral group therapy could be used as an elective psychotherapy in order to decrease anger symptoms and enhance general health among them. However, continuity of the results depends on diagnosis and rectifying, underlying assumptions, core beliefs, and primary schemas. There must be a particular attention to quality and quantity of homework assigned to the participants.

### Footnotes

**Authors' Contribution:** Mehrdad Talakar conducted the sampling, performed the intervention, and collected the data; Sayed Abbas Haghayegh designed the research, performed the statistics analysis, and drafted and revised the manuscript; Bahram Mirzaian designed and interpreted the clinical data of research.

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