

EFFECTIVENESS OF COGNITIVE BEHAVIOR THERAPY ON SELF-EFFICACY AMONG HIGH SCHOOL STUDENTS

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ABSTRACT

This study investigated the effectiveness of cognitive behavior therapy (CBT) on self-efficacy among high school students. The sample of the study includes 60 high school girls and boy students that selected from a large poll of high school students (N=400) randomly. It should be mentioned that about 400 students, 130 of them had low scores in self-efficacy. Then 60 of them selected randomly and assigned into two groups (30 of them in the experimental and 30 of them in control group). Subjects in the experimental group received individual CBT interventions (including positive thinking, cognitive restructuring, self-assertiveness training, time management, and study skills) for 10 sessions, and control group subjects didn't receive any intervention. The design of this study was a pre-test, post-test with control group. The collected data analyzed with statistical methods such as independent t-test and repeated measure ANOVA. Results showed that there was a significant enhancement from pre to post assessment in self-efficacy. The Comparison of means in post-test showed a significant difference between the scores of subjects in two groups, indicating a significant increase in experimental group rather than the control one in self-efficacy. But, the effectiveness of CBT on self-efficacy regarding to gender and grades was not significant. Further, the mutual interactions of group-gender-grades in relation to the effectiveness of CBT on self-efficacy were not significant. As a conclusion, the findings demonstrate the efficacy of CBT in enhancing the self-efficacy among high school students.

Keywords: Cognitive behavior therapy, self-efficacy, high school students

INTRODUCTION

Perceived self-efficacy is defined as people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives. Self-efficacy beliefs determine how people feel, think, motivate themselves and behave. Such beliefs produce these diverse effects through four major processes. They include cognitive, motivational, affective and selection processes (Bandura, 1994).

A strong sense of efficacy enhances human accomplishment and personal well-being in many ways. People with high assurance in their capabilities approach difficult tasks as challenges to be mastered rather than as threats to be avoided. Such an efficacious outlook fosters intrinsic interest and deep engrossment in activities. They set themselves challenging goals and maintain strong commitment to them. They heighten and sustain their efforts in the face of failure. They quickly recover their sense of efficacy after failures or setbacks. They attribute failure to insufficient effort or deficient knowledge and skills which are acquirable (Bandura, 1994).

In contrast, people who doubt their capabilities shy away from difficult tasks which they view as personal threats. They have low wishes and weak commitment to the goals they choose to pursue. When faced with difficult tasks, they dwell on their personal deficiencies, on the

obstacles they will encounter, and all kinds of adverse outcomes rather than concentrate on how to perform successfully. They slacken their efforts and give up quickly in the face of difficulties. They are slow to recover their sense of efficacy following failure or setbacks. Because they view insufficient performance as deficient aptitude it does not require much failure for them to lose faith in their capabilities. They fall easy victim to stress and depression (Bandura, 1994).

Self-efficacy beliefs can enhance human accomplishment and well-being in countless ways. They influence the choices people make and the courses of action they pursue. Individuals tend to select tasks and activities in which they feel competent and confident and avoid those in which they do not. Unless people believe that their actions will have the desired consequences, they have little incentive to engage in those actions. How far will an interest in medicine take a student who feels hopeless while studying anatomy? Whatever factors operate to influence behavior, they are rooted in the core belief that one has the capability to accomplish that behavior (Pajares, 2009).

A Cognitive Behavior Therapy (CBT) is a psychotherapy based on modifying everyday thoughts and behaviors, with the aim of positively influencing emotions (Norcross & Goldfried, 2005). The therapy assumes that most people can become conscious of their own thoughts, abilities and behaviors and then make positive changes to them. A person's thoughts are often the result of experience, and behavior is often influenced and prompted by these thoughts (Clark, 2010).

Cognitive behavioral interventions in high school would mainly be concerned with helping students realize three things: how their thought patterns affect their behavior; how they can take control of these thought patterns and how they can apply interventions to effect or change (Hall & Hughes, 1989).

Self-efficacy is a construct associated with CBT strategies that may be involved in changing individual's thoughts, behaviors, emotions, and performances (Bandura, 1997). In this respect, researchers (Krista & Fritson, 2008) examined the effectiveness of CBT (journaling or classroom-based journaling) on the student's self-efficacy. 41 students were divided randomly into two groups (25 in CBT-journaling and 16 in non-CBT-journaling group). The CBT journaling group received 10 minutes weekly discussion on cognitive behavioral strategies (e.g. Assertiveness Skills, muscle Progressive Relaxation, Thought-Stopping/Self-Talk Training, and Visual Imagery) along with the journal assignment for five months, while the non-CBT journaling group received only the journal assignment. Results indicate that there was a significant positive change in self-efficacy in all participants in the study, regardless of the type of journaling.

Kumar & Sebastian (2011) examined the effectiveness of CBT on self-efficacy and academic achievement in the adolescents. The sample consisted of 200 adolescents (100 in experimental and 100 in the control group) that had scored low scores on general self-efficacy scale (GSE) and low grades in their first two terminal examinations. The experimental group received 12 sessions' cognitive behavior group therapy interventions (e.g. Socratic questioning, problem solving, coping skills, and cognitive restructuring). Findings revealed that the experimental group exhibited a significant enhancement in their self-efficacy and academic achievement.

Hyun, Chung and Lee (2005) studied the effects of cognitive-behavioral individual therapy (CBT) on the self-efficacy, depression, and self-esteem of runaway adolescents residing in a shelter in Seoul, South Korea. The study used a control group pretest-posttest design. The experimental group and the control group consisted of 14 and 13 male subjects, respectively,

with subjects having been randomly assigned to these groups. The experimental group participated in a CBT that consisted of eight sessions over an 8-week period; the control group did not participate in the program. To examine the effects of the CBT on dependent variables, the Wilcoxon signed rank test was used. The scores on depression decreased significantly ($z = -2.325$, $p = 0.02$) and those on self-efficacy increased significantly ($z = -2.098$, $p = 0.03$) after the intervention in the experimental group. There was no significant change on self-esteem ($z = -1.19$, $p = 0.23$). In the control group, the scores on depression, self-esteem, and self-efficacy did not change significantly after the intervention period.

A number of studies have shown that mastery experiences strengthen self-efficacy expectancies that are specific to the mastery situation. Ronald (2010) assessed the effects of cognitive-behavioral coping skills training on generalized expectancies concerning self-efficacy and locus of control in test-anxious high school students. Compared with a waiting-list control group, the trained subjects exhibited significant decreases on trait and state measures of test anxiety and a higher level of academic performance on classroom tests, as well as changes in specific self-efficacy expectancies relating to test-anxiety management and academic performance.

Clark (2010) found that in most CBT programs, subjects improve their social skills, self-concept and self-efficacy.

Branham et al. (2009) found CBT and medication significantly improved the self-esteem and sense of self-efficacy of participants, as compared with those participants receiving only medication.

Liza (2010) in her study among high school students found that CBT programs have a positive significant effect on the students' self-efficacy. She found that CBT can tangibly increase self-efficacy.

Pauline, Fisher, MScN & Laschinger (2001) investigated whether relaxation training would increase caregivers' self-efficacy for controlling anxiety associated with difficult behaviors by care recipients. Caregivers' self-efficacy increased following the intervention. Length of time spent in the care giving role and duration of time since care recipients' diagnosis were significantly related to caregiver self-efficacy before the intervention, but became non-significant following the intervention. An insignificant decrease in the incidence of reported behavioral problems occurred following the intervention.

MATERIALS AND METHODS

Aim

This investigation designed to study the effect of Cognitive Behavior Therapy on self-efficacy of boy and girl high school students.

Hypothesis

CBT is effective in increasing student's self-efficacy.

Participants

The sample of this study includes 60 high school girl and boy students that selected from a large poll of high school students ($N=400$) randomly. It should be mentioned that out of 400 students, 130 of them had low scores in self-efficacy according to the cutoff point on GSES. Finally, 60 of them selected randomly and divided into two groups (30 of them in the experimental and 30 of them in control group). According to low scores in self-efficacy, subjects matched together as two by two and then one of them placed in the experimental and

the other one placed in the control group randomly. Each group involving three grades and each grade consist of five girls and five boys.

RESEARCH TOOLS

General Self Efficacy Scale (GSES)

The general self efficacy scale (GSES; Schwarzer & Jerusalem, 1995) assesses a general sense of perceived self efficacy with the aim in mind to predict coping with daily hassles as well as adaptation after experiencing all kinds of stressful life events. The scale is designed for the general adult population, including adolescents above the age of 12 years old. The GSE consists 10 self report items and each item includes of four choices (keyed 1-not at all true; 2-hardly true; 3-moderately true; 4-exactly true). Sum up the responses to all 10 items to yield the final composite score with a range from 10 to 40.

Reliability: in samples from 23 nations, Cronbach's alpha ranged from 0.76 to 0.90, with the majority in the high 0.80s.

Validity: Criterion related validity is documented in numerous correlation studies where positive coefficients were found with favorable emotions, dispositional optimism, and work satisfaction. Negative coefficients were found with depression, anxiety, stress, burnout and health complaints.

Procedure

The design of the present study is two groups pre-post test design with the following procedure.

1. Contacting and obtaining permission from the institution.
2. Establishing rapport with student parents.
3. Obtaining informed consent from student parents.
4. Screening the students for academic stress using the research tools in the counseling centers.
5. Selection of samples for research based on low scores in self-efficacy (N=60; Experimental group 15 boys and 15 girls; Control group 15 boys and 15 girls).
6. The sample will be grouped into control and experimental group using simple random sampling technique.
7. Pre assessment of control group and experimental group.
8. Intervention for experimental group.
9. Post assessment for control and experimental group.
10. Data analysis and interpretation.

Components of CBT

Session1: Warm up: Establishing rapport with students and Goal setting.

Session2: identifying the current problems.

Session3: self-observation.

Session4, 5: positive thinking training and stress inoculation.

Session6: cognitive restructuring.

Session7: problem solving training.

Session8: assertive imaginary.

Session9: time management.

Session10: review of previous sessions and helping the students to abandon therapy.

RESULTS

The purpose of the present study has been the investigation of the effectiveness of cognitive behavior therapy (CBT) on self-efficacy among high school students. In this part the inquired data analyzed with appropriate statistical methods such as mean, standard deviation, independent t-test and repeated measure analysis of variance.

Table 1. Pre-treatment, post treatment total mean scores on self-efficacy

<i>Times Groups</i>	<i>Pre-test</i>		<i>Post-test</i>		<i>MD</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Experimental	19.03	2.39	25.36	2.62	6.33
Control	19.63	2.38	20.13	2.81	0.50

In self-efficacy measure a significant change (increase in the level of self-efficacy) was observed in experimental group from pre-treatment to post-treatment. In pre-treatment the mean score was 19.03 which was increased to 25.36 (MD= 6.33 in post-treatment session (table -1)).

Table 2. Results of repeated measure ANOVA for mean scores of pre and post treatment for self-efficacy

<i>Source of Variation</i>	<i>Sum of Squares</i>	<i>df</i>	<i>Mean squares</i>	<i>F</i>	<i>Sig</i>
<i>Within Subject Effects</i>					
Time	388.80	1	388.80	394.32	0.000*
Time*group	264.03	1	264.03	267.78	0.000*
Error	57.17	58	0.99		
<i>Between Subject Effects</i>					
Intercept	53594.13	1	53594.13	4429.27	0.000*
Group	168.03	1	168.03	13.89	0.000*
Error	701.83	58	12.10		

*significant at $p < 0.001$

Table-2 shows that increase in the self-efficacy mean score which was found to be significant $F(1, 58) = 394.32$, $p < 0.001$, whereas increase in the mean score from pre to post treatment for control group was only 0.50 (table 4.37). When group-wise comparison was made (time \times group) a significant $F(1, 58) = 267.78$, $P < 0.001$ value indicated an increase in mean scores from pre to post-treatment session in experimental group. This indicates the effectiveness of CBT in increasing self-efficacy. Further, in between group effects also a significant F-value was observed $F(1, 58) = 13.89$, $P < 0.001$.

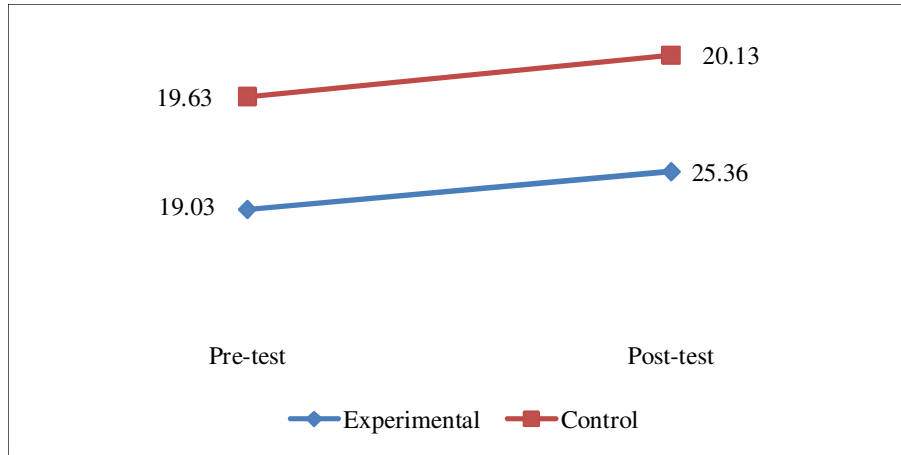


Figure 1. Graph showing means scores on self-efficacy from pre-test to post-test session of experimental and control group

Figure 4.5 shows significant differences between pre and post assessments in relation to self-efficacy in the experimental group. Graph shows that subjects in experimental group had considerable increase in self-efficacy in post-test (6.33). On the other hand, the differences between the pr-post tests scores in control group were not considerable (0.50).

The Effects of Gender, Grades and Their Interactions on Self-Efficacy

Table 3. Pre-treatment, post-treatment mean scores on self-efficacy and gender of experimental and control group

Groups	Gender	Time	Self-efficacy		
			M	SD	MD
Experimental	Girls	Pre-treatment	18.80	2.48	6.50
		Post-treatment	25.13	2.97	
	Boys	Pre-treatment	19.27	2.34	6.33
		Post-treatment	25.60	2.65	
Control	Girls	Pre-treatment	19.80	2.51	0.67
		Post-treatment	20.47	3.20	
	Boys	Pre-treatment	19.47	2.32	0.33
		Post-treatment	19.80	2.46	

Table-3 indicates that there was a change (increase) observed between pre-treatment and post-treatment mean score in self-efficacy. 1) For girls in the experimental group self-efficacy score pre-treatment was 18.80 which was increased to 25.13 in post-treatment assessment (MD= 6.50). 2) For boys in the experimental group self-efficacy score pre-treatment was 19.27 which was reduced to 25.60 in post-treatment assessment (MD= 6.33). In control group academic stress self-efficacy score on self-efficacy for girls was 19.80 which was increased to 20.47 in post-treatment assessment (MD= 0.67) and for boys self-efficacy

pre-treatment score was 19.47 which was reduced to 19.80 in post-treatment assessment (MD= 0.33) indicating no change.

Table 4. Results of repeated measure ANOVA on self-efficacy and gender

<i>Source of Variation</i>	<i>Sum of Squares</i>	<i>df</i>	<i>Mean Squares</i>	<i>F</i>	<i>Sig</i>
Within Subject Effects					
Time	165.68	1	165.68	112.71	0.000*
Time*gender	0.675	1	0.675	0.46	0.50**
Error	82.27	58	1.47		
Between Subject Effects					
Intercept	64821.008	1	64821.008	2604.3	0.000*
Gender	18.41	1	18.41	0.74	0.39**
Error	1444.08	58	24.89		

*Significant at $p < 0.001$; **non significant

Table-4 shows, a significant difference (increase in self-efficacy scores) was observed from pre to post assessment in relation to self-efficacy irrespective of gender, $F(1, 58) = 112.71$, $p < 0.001$. When gender-wise comparison was made (time*gender), the F value $(1, 58) = 0.459$, $p = 0.501$ shows no significant change between boys and girls on self-efficacy in post assessment. Further, table 4.40 shows a non significant difference between girls and boys regarding to the effectiveness of CBT in increasing self-efficacy $F(1,58) = 0.74$, $p > 0.05$.

Table 5. Results of repeated measure ANOVA on self-efficacy and grade

<i>Source of Variation</i>	<i>Sum of Squares</i>	<i>df</i>	<i>Mean Squares</i>	<i>F</i>	<i>Sig</i>
Within Subject Effects					
Time	285.21	1	285.21	32.44	0.000*
Time*grade	9.22	2	4.61	0.52	0.56**
Error	501.075	57	8.791		
Between Subject Effects					
Intercept	64728.08	1	64728.08	2509.8	0.000*
Grade	9.450	2	4.72	0.18	0.83**
Error	1469.98	57	25.79		

*Significant at $p < 0.001$; **non significant

Table-5 shows, a significant difference (increase in self-efficacy) was observed from pre to post assessment in relation to self-efficacy irrespective of grades, $F(1,57) = 32.44$, $p < 0.001$.

When grades-wise comparison was made (time*grades), the F value (2, 57) = 0.52, p=0.56 showed no significant difference in 10th, 11th and 12th grades subjects on self-efficacy in post assessment. Further, table 4.41 shows a non significant difference between grades regarding to the efficacy of CBT on depression F (2, 57) =0.18, p= 0.833.

Mutual interactions of group, gender, grades

Table 6. Mutual interactions of group, gender, grades on self-efficacy

<i>Source of Variations</i>	<i>Sum of Squares</i>	<i>df</i>	<i>Mean Squares</i>	<i>F</i>	<i>Sig.</i>
Gender * Grades	5.267	2	2.63	0.20	0.82 NS
Group*Grades	9.867	2	4.93	0.37	0.70NS
Group*Gender	8.533	1	8.53	0.63	0.43NS
Group*Gender*Grades	22.46	2	11.23	0.83	0.44 NS
Error	646.60	48	13.47		

Table-6 shows that mutual interactions of group* gender F (1, 48) = 0.63, p= 0.43; group*grades F (2, 48) = 0.366, p= 0.70; gender*grades F (2, 48) = 0.20, p= 0.82; and Group* Gender*Grades F (2, 48) = 0.83, P=0.44 on self-efficacy and effectiveness of CBT on self-efficacy were not statistically significant. It indicates that the interaction of independent variables with respect to the efficacy of CBT in enhancing self-efficacy was not significant.

Table 7. Showing the effect sizes on different dependent variables

<i>Variable</i>	<i>Groups</i>	<i>Cohen's d</i>	<i>Effect Size</i>	<i>Interpretation</i>
	Experimental	2.52	0.78	Medium
Self-efficacy	Control	-0.19	-0.09	Weak
	Between groups	1.92	0.87	Large

Table 7 shows Effect size calculations for outcome variables using Cohen's d. Results shows a magnitude of change for experimental group (0.77) which indicates that 78 percent of change in self-efficacy is explained due to the CBT interventions and for between the groups magnitude of effect size was (0.87).

DISCUSSION

This study has carried out in order to investigate of the effectiveness of cognitive behavior therapy (CBT) on self-efficacy among high school students. In the present study the following hypothesis verified with appropriate statistical methods: CBT is effective in increasing self-efficacy.

Self-efficacy is a construct associated with CBT strategies that may be involved in changing individual's thoughts, behaviors, emotions, and performances (Bandura, 1997). Table 1 shows pre-post assessment mean scores on self-efficacy. Repeated measure ANOVA test was

used for assessment of this hypothesis. Within group comparison between pre and post assessment mean score showed significant change ($p < 0.001$) indicating an increase in the mean self-efficacy score in the experimental group. The significant change indicates the efficacy of CBT in increasing the self-efficacy. Further, within the group (time \times group) interaction show a significant change (enhancement) ($p < 0.001$). Also, the obtained F ratio to determine the effectiveness of CBT according to group on self-efficacy was statistically significant. That is, significant differences observed between two groups in relation to self-efficacy. In other word, comparison of means of groups in post-test revealed that subjects in the experimental group gained scores more than the control group in respect to self-efficacy.

Further, the observed improvement i.e., increased self-efficacy from pre to post intervention was reconfirmed by the medium effect size (according to Cohen's d calculation, 1998) 0.78 for the CBT group (table-4). The effect size for between groups was large (0.87), indicating CBT was effective in enhancing the self-efficacy.

This finding is concordant with the previous studies (e.g. Branham et al.2009; Hyun, Chung & Lee, 2005; Krista & Fritson,2008; Kumar, & Sebastian, 2011; Liza, 2010; Ronald, 2010; Pauline, Fisher, MScN & Laschinger, 2001) and supports the effectiveness of CBT in enhancing the self-efficacy.

A probability explanation for these findings is that, most of the students received intervention for the first time in their life, and it is evident that have better performance than the control group because of externalizing their inner problems and receiving some effective strategies to change.

On the other hand, since the researcher was not one of members of schools, and there was no prior familiarity between them, their confident to researcher regarding to keeping their secrets increased and for this reason they cited problems that were base of their all affective, interpersonal and motivational disturbances. Therefore, given appropriate techniques could have marked effects in increasing their beliefs about their potential and obvious abilities.

Lack of knowledge about how to manage the time was another major factor that was lead to a sense of low self-efficacy. Therefore, given a suitable frame to help the student how to manage their time and allocating enough time to each subject (particularly to difficult subjects such as foreign language, Arabic, Algebra, Chemistry, mathematics, and etc.) could be another way to increase their self-efficacy, because allocating enough time to subjects in respect to their priority and importance reduce time pressures and provides opportunities to pleasure and other social activities. As a consequence, person can believe his/her abilities by managing time, and show improved performance.

Having no knowledge about how to study well, lack of concentration and loss of motive to continue on the study was related to a sense of low self-efficacy, because they felt that some subjects are beyond of their academic capability and therefore gave it up. PQ4R training was a way of saving time and concentration on the important contents of subjects. This method could decrease the pressure of time and the effects of result in difficult subjects.

Generally, according to Bandura's theory (1986), people with high self-efficacy-that is, those who believe they can perform well- are more likely to view difficult tasks (here difficult academic matters) as something to be mastered rather than something to be avoided. It should be mentioned, the positive effect of CBT on self-efficacy-that is, increased self-efficacy- can have a positive influence on the student's motivation, thought patterns and responses (Bandura, 1986).

In respect to motivation, increased self-efficacy causes the student become more likely to make more of an effort, and persist longer, than unchanged self-efficacy (control group). The stronger the self-efficacy or mastery expectations, the more the effective efforts. On the other hand, low self-efficacy provides an incentive to learn more about the subject. As a result, students with a high self-efficacy may not prepare sufficiently for a task.

In relation to thought patterns and responses, low self-efficacy can lead students to believe tasks are harder than they actually are. This often results in poor task planning, as well as increased stress. Students become erratic and unpredictable when engaging in a task in which they have low self-efficacy. On the other hand, student with increased self-efficacy, take a wider overview of a task in order to take the best rout of action and behavior. Students with a g high self-efficacy learn how respond to a failure and attribute the failure of external efforts, where a student with low self-efficacy attributes failure to low ability. For example, a student with high self-efficacy, in regards to mathematics may attribute a poor result of a harder than usual test, feeling sick, lack of effort or insufficient preparation. A student with low self-efficacy attributes the result to poor ability in mathematics. Therefore, increased self-efficacy can change student's attribution towards the subjects and cause they believe their academic potential. This in turn, changes their perspective towards previous academic failure and will increase their academic efforts. The consequence of this change will be low academic stress and high academic performance.

Further, increased self-efficacy will change individual's impressions towards him/herself. On the other word, individual's impression and cognition as someone ineffective and inefficient will change as someone effective and efficient. Thus, they know how to spend their time, energy, and other resources in the best way, because, they believe they can overcome on the difficult tasks and problems by make an enough effort. These results support the results of previous studies which showed that confident individuals typically took control over their own learning experience and were more likely to participate in class and preferred hands-on learning experiences. Those individuals reporting low self-efficacy typically shied away from academic interactions and isolated themselves in their studies (Wilma & Sharon, 1998).

LIMITATIONS AND RECOMMENDATIONS

Despite of all attempts to doing the study, the researcher was exposed with some limitations that inevitably influenced the internal validity of the study.

In the present study a small sample Allocated to each grade. Therefore, to generalize of results to all high school students should be cautious.

Some students could not attend quietly in defining therapeutic sessions, because their teachers didn't permit them to leave the class. Thus, some of them had to leave the session after half an hour.

The last sessions were exposed to the student's exam. Hence, 14 days before exam student could not attend at school. For this reason, the researcher had to avoid of using some CBT techniques (e.g. Relaxation training).

Since the intervention was carried out within the school, factors such as loudness voice, taking label of mad or sanity from their classmates disrupted the student's concentration and prevented them to participate in sessions.

Another limitation was comparing the researcher with the school's counselor; because they posed that counselor divulge their secrets. Therefore, some of them behaved very cautiously in the first sessions of intervention.

The researcher could not find out comprehensive studies in relation to the effectiveness of CBT on self-efficacy, thus, comparing of the present finding to previous findings completely was not possible.

According to research findings and limitations, it is suggested that:

In the next studies, students with their parents participate together in the intervention program, because most of the studied students had some interpersonal problems with their parents.

Presenting training programs in schools for parents to know how to have an appropriate relationship and behavior with children, and how to help their children to identify and believe their own abilities.

Schools try to use of expert and confident counselors, so that students can easily express their problems without fear of labeling.

Researchers study more samples in each grade in the future, because of increasing the external validity of findings.

Establishing comprehensive counseling trainings for students about how interpersonal relations with parents, teachers and classmates, how believe their abilities, and how make a positive impression toward themselves.

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