Effects of critical thinking instruction on mental health in adolescents

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Abstract

This study aims at investigating the effect of critical thinking education on mental health. It is an experimental study which uses random sampling method to select two groups of students from a school. Each group consists of 20 students. One of them is the control group and the other is the experimental group. Questionnaires were used as the data collection tool. There were eight sessions of training. Each session took 50 minutes and was held once a week. After data collection, covariance analysis was used to test the hypotheses. In order to measure the significance of the average difference of scores, f (Levine) test of scores was used.

To validate the statistical model of the hypotheses, Kolmogorov and Simirnov tests were used. The results of data analysis shows that critical thinking training leads to increase in the components of mental health particularly anxiety and depression.

Keywords: Critical thinking, mental health

Introduction

The skill of thinking properly is one of the important topics that have preoccupied the minds of scholars from the old times until now. Nowadays, developing different thinking skills is one of the most fundamental objectives of educational systems. According to Shariatmadari (2001), thinking is the goal-oriented flow of beliefs and associations which start to exist when an individual is faced with a particular issue. Through this flow of beliefs and associations, the person tries to understand the problem he/she is encountered with and solve it using his/her previous experiences in a realistic manner. There are different types of thinking one of the most important of which is critical thinking. Simply put, critical thinking is an individual's ability to analyze and evaluate information (Daron, 2000).

Different definitions have been given of critical thinking some of which are mentioned in the following sentences:

Critical thinking means adopting a smart, careful and tactful attitude towards other people's beliefs and perspectives. (Hosseini & Bahrami, 2003).

Critical thinking is the process of analyzing ideas in order to find out whether they are valid and useful. (Hosseini & Bahrami, 2003).

Critical thinking involves recalling facts, using logic, raising key questions, creating mental concepts and analyzing information. (Hosseini & Bahrami, 2003).

Critical thinking is the ability to analyze information and experiences. Learning this skill will enable young people resist against harmful values, group pressure and the mass media and remain safe from the damages caused by them. (Ramezankhani, 1999).

Ennis (1985) believes that critical thinking is “reasonable and sharp thinking about what to do and what to
Byzly and Leap define critical thinking as an orderly process of making firm and decisive judgments which allow an individual have a rational evaluation of the events, texts, concepts, methods, and topics. (Leap & Byzly 2004: 3).

Richard and Paul offer a definition of critical thinking which goes like this: critical thinking is the art of thinking about how you think. You are a critical thinker when you try to think better, more clearly, more accurately and more defensibly (Quoted in Smith, 1999).

The importance of thinking is known to all people and everyone sets his/her wisdom as the criterion against which he/she carries out his/her daily activities. All people plan their activities on the basis of their thoughts and reflections. The people who have better thinking systems are usually more successful because they think better and more, their thoughts are more goal-directed, they question life’s events and issues and look at them again from a new perspective and they highly avoid judgments about different issues. It is said that such people possess an ability called 'critical thinking'. The concept of critical thinking began to be tested in general education literature since early 1980. Some researchers have defined it as goal-directed thinking whose base is judging by reasons and documents and not by guesses and suppositions.

Adolescence is one of the most important periods of life and one of the most critical phenomena which take place in this period is puberty. Understanding the natural process of puberty and the problems that might arise during this period will help adolescents solve those problems and step into the adulthood successfully. When a child reaches the age of puberty, principal and important changes in his/her appearance, social and sexual behaviors, and mental states occur, the child enters a new stage of life and his/her attitude towards the environment changes. The powers and abilities of an adolescent during puberty are more than any other period of life. These powers and abilities can take the individual as well as the society to the zenith of development and perfection or to the abyss of lowliness and suffering. Most habits and behaviors related to personal hygiene are shaped in this period of life and will continue to exist in adulthood. In recent decades, psychologists who have been studying behavioral disorders and social deviations have come to the conclusion that most of those disorders and deviations are rooted in the individuals’ disability to do a fair and accurate analysis of themselves and their environments, their lack of control over their emotions, lack of self-sufficiency needed to confront difficult situations and absence of preparedness to solve problems of life in a suitable manner. Therefore, regarding the ever-increasing complexities and changes of societies and the development of social relations among individuals, preparing people especially the younger generations to confront difficult situations seems to be necessary. Thus, psychologists supported by international and national organizations have started life skills education in schools across the world in order to prevent mental illnesses and social disorders (Taremyan, 1999).

Regarding the significant role of schools in securing students' mental hygiene, life skills training plans including the teaching of critical thinking can be effective methods for the development of healthy personalities in students and the protection of their mental hygiene. Thus, schools should take into consideration their students' mental health besides improving the students' educational performance. In order to achieve the goal of securing students' mental health, schools should take essential measures because if that goal is obtained many of the educational problems would decrease automatically (Taremyan, 1999). Mental, social, physical, sexual, occupational, cognitive, moral and emotional developments are different aspects of an individuals' growth each of which requires particular skills and abilities. In fact, it can be said that the evolution of developmental stages is dependent upon life skills and critical thinking.

Self-awareness, self-confidence and self-esteem are the essential indexes of every individual's capabilities and weaknesses. Possessing a sufficient rate of these three traits enables an individual take advantage of his/her life's opportunities, be prepared to confront probable dangers, think about his/her family and society and try to find solutions to the problems that exist around him/her. Life skills are tools that can improve self-awareness, self-confidence and self-esteem in individuals and thus they can help individuals and societies in turn reach their goals. Observing and maintaining performance criteria increases self-efficacy in individuals and failing to observe those criteria decreases self-efficacy in them. According to the definition given by Bandura, self-efficacy is based on our perception of the degree of control we have over our lives. People try to control events which influence their lives. By affecting the conditions over which they can have a particular amount of control, they can realize their favorable future in a better way and can prevent unpleasant results. Almost every individual tries to gain control over his/her life conditions because this exercise of control can bring about numerous personal and social benefits for them. The individuals' ability to influence the outcomes of their actions makes those outcomes predictable. Predictability of the outcomes in turn nurtures the individuals' ability
to adapt themselves to their life conditions. Inability to exercise one's influence over the issues which have an unfavorable effect on his/her life creates anxiety, hopelessness and disappointment in people (Bandura, 1995). According to Bandura's theory the people who have strong beliefs about their self-efficiency put more effort and persistence into the tasks that they carry out compared to the ones who have weak beliefs and as a result their performance in doing the tasks is better (Bandura, 1993).

One of the reasons that contribute to the importance of critical thinking is the ever-increasing spread of different mental disorders all over the world. Critical thinking training enables individuals to turn their passive knowledge, values and attitudes into active capabilities. In other words, the person knows what to do and how to do what he/she should do. Life skills result in motivation to have healthy behavior. The people who have strong self-efficiency beliefs see their duties as challenges that they should overcome and not as threats that they should get away from. These people are more deeply involved in activities and try more at the times of failure. The individuals who have weak self-efficiency beliefs see their duties more difficult than what they actually are and this attitude causes them to become lazy and depressed and have a limited vision to solve problems (Pajares, 2002). Achieving educational goals as the essential goals of schools entails securing students' mental hygiene.

Many studies show that there is a relationship between students' mental health and their educational development and the students who suffer from some kind of mental problem often experience educational failure. It seems that taking appropriate measures to secure students' mental health is a necessary act to be taken into consideration in order to achieve educational goals and guarantee mental health in individuals of different ages in the society (Shafaiabadi, 2004).

Students can make important life decisions using problem solving skills since such skills help them analyze their problems properly. Adolescents learn communication skills and how to cope with life's challenges in their growth process. The acquisition of these skills and abilities takes place by modeling an individual's family, school, society and friends (Ansari, 2005: 78).

Nowadays, despite the occurrence of deep cultural changes and changes in lifestyles many individuals lack necessary abilities to confront life problems and this issue has made them susceptible to the negative conditions that everyday problems bring about. Numerous studies show that many of the problems of mental hygiene and mental-emotional disorders have psycho-sociological roots. For instance, research about addiction and misuse of drugs shows that three factors related to drug misuse are weak self-esteem, inability to express one's feelings and lack of communication skills. Moreover, studies show that there is a significant relationship between weak self-efficiency and the use of cigarette and alcohol, misuse of drugs, dangerous behavior and weak cognitive functioning. Studies also indicate that improving challenge confrontation skills and psycho-sociological abilities are very effective ways of improving an individual's life. Psycho-sociological abilities are those abilities that help a person confront life challenges more effectively and have a better performance in difficult situations. Such abilities enable an individual have a positive and adaptive behavior towards other individuals, the society and his/her immediate environment and secure his/her mental health (Khani, 2001: 19).

Several studies executed life skills training programs in schools and showed the impact of these trainings on various aspects of mental health. For example, a significant decrease in social anxiety (Botovin & Ing, 1982) and the improvement of self-image (Kruter, 1991) and self-esteem (Int, 1994) were reported. In many studies carried out on the same topic we see other results such as increase in children's self-esteem, improvement of the relationship between teacher and students, decrease in the rate of absences from school and reduction in students' bad behavior.

Vaysong (1990) studied the effect of life skills training on self-awareness. The results of this study showed that after receiving life skills training, the students were more honest, more altruistic and less aggressive. (World Health Organization, translated by Nuri Ghasemabadi and Mohammadkhani, 1998). In a research study about the effect of life skills training on students' self-confidence in relation with child development methods used by parents, carried out in the city of Ardabil in Iran, Esmaeli (2001) showed that the trained students whose parents had used child development methods had higher self-esteem scores compared to untrained students.

Haghighati et al (2006) showed that life skills training increases mental health and self-esteem among female students in the experimental group compared to the ones in the control group.

Research in the field of drug abuse shows that three major factors which contribute to drug abuse are: poor self-esteem, inability to express one's feelings and lack of communication skills (McDonald et al, 1991 as quoted by Nuri & Mohammadkhani, 2000).

Different studies carried out after the execution of life skills training programs in schools showed significant progress in different aspects of mental health such as self-image (Kruter et al, 1991), self-esteem (Int et al), self-
efficiency (Elias et al, 1991), emotional and social incompatibility (Kaplan et al, 1992) and significant decrease in social anxiety (Botovin & Ing, 1989 quoted by Nuri & Mohammadkhani, 2000).

Research studies show that the adolescents who have the skill of rejection (the ability to say 'no') are less vulnerable to peer pressure. In other words, vulnerability to peer pressure is lower when adolescents have a higher ability and decisiveness to reject, a more internal locus of control and a higher awareness about drug abuse. When the locus of control is internal, self-esteem is higher. Programs to teach the skill of rejection and resistance against peer influence and pressure to adolescent students help them become less vulnerable to their peers' pressures, protect their internal locus of health control and self-esteem, thus having a positive influence (Shopp & Coupland, 1993 quoted by Aghajani 2002).

Problem-solving is a practical (pragmatic) confrontation skill which is also effective and beneficial from the psychological point of view. This skill increases self-confidence, self-sufficiency and the feeling of competence. Thus, effective problem-solving skills are related to good personal compatibility and this is a finding referred to by many researchers (Hepner & Hillerbrand 1991, quoted by Aghajani 2002).

Morris (2002) studied the relationship between self-efficiency and the symptoms of emotional disorders in a big sample of normal adolescents in the Netherlands. The results showed that low level of self-efficiency is accompanied by high levels of anxiety, mental disorder, psychopathy and symptoms of depression. Marlo et al showed that there is a correlation between self-efficiency and physical and mental health in patients suffering from Rheumatism and arthritis. In other words, patients with low levels of self-sufficiency have higher rates of physical deficiency, feel more weariness and pain and show more depressed and anxious moods (quoted from Ali Niakarrusi, 2004).

A study was carried out on the role of gender in individuals' beliefs about their self-sufficiency in computer and mathematical skills the results of which showed that the rate of perceived self-sufficiency beliefs in mathematical and computer skills in male adolescents was higher than that of female adolescents (Shunk & Pajares).

Methods

This study has a quasi-experimental design and uses a pre-test-post-test scheme. There is a control group which was selected randomly. The population of the study consisted of 5750 students at junior high schools in the city of Kerman. In this stage Goldberg General Health Questionnaire (GHQ-28) was used to measure 50 students' mental health and social self-efficiency questionnaire was used to measure their self-efficiency. In the next step, in order to prepare the final sample 20 students were selected randomly as the experimental group and 20 others as the control group.

Measurement instruments used in this study were as follows:

Goldberg General Health Questionnaire [GHQ-28] (to assess students' mental health.

It is important to note that the experimental group's activities were the basis of the training sessions. To perform this research, after carrying out the pre-test on the population of the study, selection of the sample and random assignment of experimental and control groups, critical thinking skills were taught to the experimental group during a period of one month (Two training sessions in a week). At the end of the course, the experimental and control groups were evaluated using the same basic tools (Goldberg General Health Questionnaire, and Levenson locus of Control Questionnaire). The results of the pre-test and post-test performed on the two groups were analyzed using two independent sample t-tests.

Data analysis

In this study covariance analysis was used to test the hypotheses. In order to use this kind of analysis, p value must be more than 0.05. In this research, all hypotheses satisfy this condition except one of them for which t-test was used. To determine normality of data Kolmogrov- Smirnov test was used. Eta coefficient was used to measure the rate of training effect for each hypothesis.

Findings
The impact of critical thinking training on students' mental health was analyzed using covariance analysis. To examine the homogeneity of the regression (gradient) coefficient, the two-variable GLM variance analysis was used which is shown in Table 1-2, the calculated p-value was 98 percent greater than the significance level (0.05). Therefore, it can be said that the data confirm the homogeneity of regression gradient hypothesis. Thus the ANCOVA test can be used.

<table>
<thead>
<tr>
<th>source of changes</th>
<th>Sum of squares</th>
<th>degrees of freedom</th>
<th>Mean of squares</th>
<th>F</th>
<th>P</th>
<th>ITA squares</th>
<th>statistical power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group* mental health</td>
<td>0.976</td>
<td>3</td>
<td>0.325</td>
<td>0.57</td>
<td>0.98</td>
<td>0.17</td>
<td>0.57</td>
</tr>
</tbody>
</table>

**Analysis of covariance**

In this method, the statistical hypotheses are as follow:

H0: The mean of mental health scores in the control and experimental groups is the same.

H1: The mean of mental health scores in the experimental group is more than that of the control group.

According to the table of covariance analysis the calculated p-value (0.000) was significantly lower than (α=0.05) meaningful level, so H0 is rejected (H1 is confirmed), it means that the mean of the scores for mental health of the experimental group is significantly lower than the mean of the scores for the control group. Therefore, life skills training has a significant effect on increasing students' mental health. Due to ITA's square coefficient, the rate of life skills effect on students' mental health is 75.3%.

<table>
<thead>
<tr>
<th>source of changes</th>
<th>Sum of squares</th>
<th>degrees of freedom</th>
<th>Mean of squares</th>
<th>F</th>
<th>P</th>
<th>ITA squares</th>
<th>statistical power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>0.36</td>
<td>25</td>
<td>166.93</td>
<td>0.32</td>
<td>0.000</td>
<td>0.986</td>
<td>0.999</td>
</tr>
<tr>
<td>Group</td>
<td>177.19</td>
<td>1</td>
<td>177.19</td>
<td>39.62</td>
<td>0.000</td>
<td>0.753</td>
<td>0.999</td>
</tr>
<tr>
<td>Error</td>
<td>58.14</td>
<td>13</td>
<td>4.47</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Physical functioning hypothesis**

In order to analyze the homogeneity of regression coefficients (gradient), GLM test was used to analyze two variance factors. As shown in table (1-3), the value of −p is 0.002 which is less than the significance level of 0.05. Thus it can be said that the data do not confirm the regression gradient homogeneity hypothesis. Since we cannot use ANCOVA test, in order to obtain the mean difference of the two groups, paired and independent t-tests were used with respect to the differences of pre-test and post-test scores in the control and experimental groups.

<table>
<thead>
<tr>
<th>source of changes</th>
<th>Sum of squares</th>
<th>degrees of freedom</th>
<th>Mean of squares</th>
<th>F</th>
<th>P</th>
<th>ITA squares</th>
<th>statistical power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group* Reduction of Impaired physical function</td>
<td>34.35</td>
<td>6</td>
<td>5.72</td>
<td>5.37</td>
<td>0.002</td>
<td>0.64</td>
<td>0.967</td>
</tr>
</tbody>
</table>
Table 4 shows that the calculated t equals 6.67 and p-value (significance) equals 0.000. Since significance is smaller than the significance level (α = 0.05), it can be said that there is a significant difference between the reduction of impaired physical function in experimental and control groups. In other words, critical thinking training had a significant effect on the reduction of impaired physical function. According to table 4, the difference between means of the scores in reduction of physical function impairment, is 3.95 in the experimental group and 0.75 in the control group (0.75<3.95). This indicates that students' physical function impairment reduced significantly after critical thinking training.

Table 4: t-test statistics to compare the difference between means of pre-test and post-test scores of physical function impairment reduction in experimental and control groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Number</th>
<th>Difference</th>
<th>Standard deviation</th>
<th>Degrees of freedom</th>
<th>Calculated t</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>20</td>
<td>0.75</td>
<td>0.85</td>
<td>19</td>
<td>6.67</td>
<td>0.000</td>
</tr>
<tr>
<td>Test</td>
<td>20</td>
<td>3.95</td>
<td>2.6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Effect of critical thinking training on students' anxiety reduction

With respect to ETA square coefficient, the value of critical thinking effect on students' anxiety reduction is 31.6 percent (Table 5).

Table 5: Descriptive statistics for pre-test and post-test measures of students' anxiety in experimental and control groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-test</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard deviation</td>
</tr>
<tr>
<td>control</td>
<td>8.15</td>
<td>4.12</td>
</tr>
<tr>
<td>experimental</td>
<td>7.75</td>
<td>3.27</td>
</tr>
</tbody>
</table>

Table 6: Covariance analysis of the effect of positive thinking training on students' anxiety reduction

<table>
<thead>
<tr>
<th>source of changes</th>
<th>Sum of squares</th>
<th>degrees of freedom</th>
<th>Mean of squares</th>
<th>F</th>
<th>P</th>
<th>ITA squares</th>
<th>statistical power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>186.44</td>
<td>12</td>
<td>15.54</td>
<td>1.45</td>
<td>0.206</td>
<td>0.401</td>
<td>0.611</td>
</tr>
<tr>
<td>Group</td>
<td>128.78</td>
<td>1</td>
<td>128.78</td>
<td>12.02</td>
<td>0.002</td>
<td>0.316</td>
<td>0.916</td>
</tr>
<tr>
<td>Error</td>
<td>278.56</td>
<td>26</td>
<td>10.71</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Analysis of social function hypothesis

Table 7: Covariance analysis of thinking positive training effect on the reduction of students' social function disorder

<table>
<thead>
<tr>
<th>source of changes</th>
<th>Sum of squares</th>
<th>degrees of freedom</th>
<th>Mean of squares</th>
<th>F</th>
<th>P</th>
<th>ITA squares</th>
<th>statistical power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>63.06</td>
<td>8</td>
<td>7.88</td>
<td>1.008</td>
<td>0.451</td>
<td>0.212</td>
<td>0.611</td>
</tr>
<tr>
<td>Group</td>
<td>6.69</td>
<td>1</td>
<td>6.69</td>
<td>0.856</td>
<td>0.362</td>
<td>0.028</td>
<td>0.146</td>
</tr>
<tr>
<td>Error</td>
<td>234.69</td>
<td>30</td>
<td>7.82</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Analysis of depression hypothesis
In order to evaluate regression coefficients (gradient) homogeneity, GLM bi-factor variance analysis was used. The value of $p$- was 0.002 which is smaller than significance level of 0.05. Therefore, it can be said that the data do not confirm the homogeneity of regression coefficient. Thus, ANCOVA test cannot be used and paired and independent t-tests are used to obtain the difference of means between the two groups. The differences between pre-test and post-test scores of control and experimental groups were calculated.

Table 8: Analyzing homogeneity of regression coefficients (gradient)

<table>
<thead>
<tr>
<th>Statistical power</th>
<th>ITA squares</th>
<th>P</th>
<th>F</th>
<th>Mean of squares</th>
<th>degrees of freedom</th>
<th>Sum of squares</th>
<th>Source of changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.928</td>
<td>0.634</td>
<td>0.006</td>
<td>5.20</td>
<td>42.77</td>
<td>5</td>
<td>213.83</td>
<td>Group* Physical function impairment</td>
</tr>
</tbody>
</table>

Table 9 shows that the value of t equals 4.6 and p-value (significance) is equal to 0.000. Since the significance level is smaller than the significance level of $\alpha = 0.05$, it can be said that there is a significant difference between the differences of students' depression reduction scores in the pre-test and post-test of the experimental and control groups.

<table>
<thead>
<tr>
<th>Group</th>
<th>Number</th>
<th>Mean difference</th>
<th>Standard deviation</th>
<th>Degree of freedom</th>
<th>Calculated t</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>20</td>
<td>0.60</td>
<td>2.21</td>
<td>19</td>
<td>4.6</td>
<td>0.000</td>
</tr>
<tr>
<td>Experimental</td>
<td>20</td>
<td>6.6</td>
<td>6.41</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Conclusion

Hypothesis 2: Critical thinking training has a positive effect on students' mental health
In the control group, means of mental health scores in the pre-test and post-test were 29.05 and 27.65, respectively and in the experimental group, means of mental health scores in the pre-test and post-test were 31.95 and 20.95, respectively. The results obtained from testing this hypothesis are consistent with the results of the studies carried out by Botovin et al (2000), Mishara (2009), Vank (2010), Sharifi (1993), Piri (1977) and Aghajani (2003).

An individual's psychological capacity consists of his/her ability to confront everyday life's expectations and difficulties. One way to prevent mental and behavioral problems is to improve individuals' psychological capacity which can be achieved through teaching communication skills.

Hypothesis 3: Critical thinking training reduces students' physical function impairment
Several studies carried out after the implementation of life skills training program in schools, showed that this program reduces symptoms of physical function impairment in students. The results obtained from testing this hypothesis, are consistent with the results of the studies carried out by Vanzel Victoria et al (2009), Haghighi et al (2006), Samari & Lali Faz (2005) and Aghajani (2006).

Skills related to physical health/health maintenance
This type of life skills includes skills which are related to movement and balance growth, keeping a good nutrition, weight control, physical health, exercising, sexual physiological aspects, stress control and selection of recreational activities.
Problem solving
One other factor which is effective on mental health is problem solving. Generally, problem solving is an individual's innovative cognitive-behavioral mechanism through which he/she tries to determine, discover or devise effective and adaptive confrontation strategies to face everyday problems. In other words, problem solving is an important confrontation strategy which improves individuals' personal and social capability and development and reduces symptoms of mental problems.

Hypothesis 4: Critical thinking training reduces students' anxiety
Life skills' training is effective in reducing students' stress and sleeplessness. Several studies were carried out after the implementation of life skills' training program. The results of hypothesis testing are consistent with the findings of studies conducted by Sharifi (2004), Beigloo (1996). One of the life skills which are effective in reducing students' anxiety is critical thinking. Critical thinking in very simple words is an individual's ability to analyze and evaluate information.
Undoubtedly, decision-making is one of the most important life skills, because through the decision-making process, an individual must always select one way from among a variety of ways. If an individual does not have sufficient skills to make decisions, he/she will not be able to decide and thus either suffers from conflicts and tensions which result from the decision-making process or falls into the trap of depression, anxiety and other inconveniences by making incorrect and illogical decisions.

Effect of critical thinking training on reduction of students' social function disorder
Life skills' training is effective in reducing students' deficient social interactions. Several studies carried out after the implementation of life skills training program, show the effect of such training reduction of deficient social interactions. The results obtained from testing this hypothesis are consistent with the results of the studies carried out by Moot et al (1995), Sharifi (2004), Beigloo (1996).
Critical thinking training is exercised with the purpose of improving psycho-sociological capabilities of individuals and securing their physical, mental and social health. This training enables an individual to turn his knowledge, values and attitudes into action. A person who has critical thinking ability knows what to do and how to do it. Therefore, by valuing communication skills and reinforcing them among individuals in a society, effective steps can be taken to improve mental health in society. Besides its formal function of teaching students how to read and write, a school should have a role in teaching critical thinking skills to students.

Effect of critical thinking training on reduction of students' depression
Critical thinking training is effective in reducing students' depression. Several studies carried out after the implementation of life skills training program in schools, show the effect of this training on the reduction of depression. However, the results of testing this hypothesis are not consistent with the results of studies conducted by Sharifi (2004), Beigloo (1996) and Piri (1998).
Adolescence is a period of life during which an individual experiences an outburst of emotions. Children and adolescents should learn ways of recognizing their own emotions and those of others. They should also realize how these emotions influence behavior and learn facing negative emotional effects. Anger, sorrow, hatred, aggression and emotions of this kind seriously threaten mental hygiene if they are not controlled.
If we look at the issue from a psychological perspective, we see that if mental pressures continue, individuals' mental health is seriously endangered. Anxiety, depression and distrust in the environment are the most common consequences of being in a stressful environment.
As the above research findings show, critical thinking training especially the teaching of problem-solving skill is effective in improving individuals' mental health particularly in reducing rates of anxiety and depression in them. These findings are completely consistent with the findings of other studies concerning the same topic.
Therefore, with respect to the findings of the present study and several other studies, it can be said that the people who have physical, mental and social health are the ones who feel they are masters of their own destinies, control their lives effectively and responsibly, confront life's obstacles and challenges successfully and take the right path towards perfection and get closer to their desired states of being every day. If we carefully observe the world around us, we see that most of the individuals, who have had achievements in different aspects of life, possess the above-mentioned characteristics.

Practical implications of the study
Including life skills and critical thinking training courses in education from pre-school period to university
2. Practical teaching in all courses in order to develop critical thinking training
3. Planning in-service training courses to familiarize teachers, managers and trainers with the skills students need, the necessity of these skills and methods of teaching them

Suggestions for further research
1. With respect to the practical effects of critical thinking education on different aspects of people's life in the society, it is suggested that more comprehensive studies of greater populations be conducted by the scholars in this field.
2. It is suggested that the effect of critical thinking training on other variables such as educational performance, violence, delinquency, suicide, test anxiety and speaking anxiety be investigated since these are some of the most common issues and problems among students.

References:

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