The effectiveness of training positive thinking skills on female student creativity

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Abstract: This study has been conducted aiming to determine the effectiveness of training positive thinking skills on the creativity level of the students in district 5, Tehran. This study is quasi-experimental with pretest - posttest control group. The population of this study involved all female students of secondary high schools in the nonprofit schools of district 5 education in Tehran; which of this population one school was selected using random cluster sampling method and of the selected schools, two high schools were selected using random sampling. In this study, Abedi creativity questionnaire was used to assess creativity. The study was performed so that first pretest was implemented for both groups, then provided positive thinking sessions for the experimental group for 8 sessions of 90-minute duration, but no intervention was carried out for control group. After completion of training for the experimental group, both groups were put under posttest creativity test. Likewise, the research required data were collected in this way and analyzed with covariance test; findings showed that positive thinking skills significantly affect the creativity and its dimensions (innovation, flexibility, elaboration and fluency) and enhance the creativity of the students.

Keywords: creativity, innovation, thinking, positive thinking skills.

Introduction

Human life today compared to centuries and millennia before has been highly evolved and transformed. This kind of life because of social, educational, economic and cultural complexities needs specific skills, such as high-level thinking can be noted. High-level thinking can be considered as a non-algorithmic and complex thinking which often produces a variety of solutions. To date, various types of high-level thinking have been identified so far, including creative thinking and critical thinking and problem-solving can be noted. (Miri, David and Uri, 2007). One of the aspects of high-level thinking is creativity. Conceptual creativity associated with differences in individuals. This concept was developed in order to explain why some people have a greater ability to invent new solutions to problems (Jauk et al., 2013). Today, psychologists believe that creativity is not innate, but can also be acquisitive. Children can be learnt through training and educating to think of unusual solutions and cope with their problems through divergent thinking and find appropriate solutions (Parsamanesh and SobhiGharamaleki, 2013). Numerous definitions have been made of creativity, to date. Sternberg (2001, cited by Agahi Esfahani et al., 2004) believes that creativity is the combination of initiative power, flexibility and sensitivity to ideas that enable one to think of generating outcome resulting in personal satisfaction and happiness of others. But now, many researchers have reached single definition of creativity: creativity means creating new and useful ideas or solutions (Motyl and Philippi, 2014; Amabile, 1988, quoted by Chen et al., 2013; Zimmerer and Scarborough, 2008, according to Antonio et al., 2014). Torrance and Goff (1989, quoted by Abedi, 1993) know briefly creativity composed of four main factors: 1) fluency that the talent of generating ample ideas; 2) innovation means ingenious talent to produce innovative, unusual and fresh ideas; 3) flexibility is the ability to produce ideas or very different methods; 4) elaboration is the talent of attention to detail. According to the carried out studies, it has been shown that creativity can be improved by different training programs (Scott,Leritz&Mumford, 2004). Training optimism and positive thinking skills can help solve many of the problems and issues arising from the control source to humans and a positive attitude to the lifes' everyday problems enable them to bring vitality and happiness to them (Malek Mohammadi, 2014). As the father of positive thinking psychology Martin Seligman states, this psychology is the psychology of the twenty-first century; the science that instead of disability and human weaknesses, focused on peoples' skills; abilities such as living happy, pleasure, problem-solving power, and optimism.

Although, as Martin Seligman says, there can be seen the root of positive thinking psychology in the statements of twentieth century psychologists, but the first person who raised this issue in a scientific way was "Seligman". Before him humanism psychologists like Rogers and Maslow also had more or less such a vision to the human (Seligman, 2000; translated by Davarpanah, 2004). Some psychologists believe that psychology has too focused on the negative aspects of behavior and not paid enough to the positive aspects of behavior. Seligman , & Csikszentmihalyi (2000) believe that 99 percent of the psychologist's time is spent to restore the problem-having individuals to normal situation and it can be said that no effort or cost are not adopted to help the ordinary people until they exert all their potentials to work out and enjoy life beyond the usual life (Sohrabi and Jvanbakhsh, 2009). Recently, psychology has studied issues and new phenomena and found new things to say in this regard. The emergence of new trends like health and positive prospective psychology is the evidence for this claim (Sohrabi and Jvanbakhsh, 2009). Positive thinking people have a lot of positive features. The results of Sanjay et al. (2008) indicated that optimistic people than pessimistic people are significantly more satisfied with their relationship with their wives. In addition to the optimists, their partners also reported satisfying relationships. Mousavi Nasab and Taghavi (2006) in their study figured out that optimistic people are in reliability mode and exhibit more stability of themselves; Even if the prosperity be hard or in deteriorating circumstances, optimists believe that adversities can successfully be manipulated in a way, but pessimists expect their misery. These features culminate positive-thinking people in well dealing effectively and efficiently with problems and do not allow to loose the foundations of life because of the problems (according to the Nazari, 2009 and Malek Mohammadi, 2014). Dastgheib, Alizadeh and farokhi (2012) research affirms the impact of positive thinking skills education on student creativity. In addition to the mentioned studies, various national and international studies have been conducted regarding training in the field of creativity and positive thinking, for example, the results of Cheraghian (2015) investigation showed positive thinking training is effective on increasing the sense of belonging to the school and relationships with other students. Mirzaee Fandokht research (2014) demonstrated it had been effective in reducing education burnout. Rahravi (2013) concluded that it is effective on the feeling of happiness. Jabari, Shahidi and Moutabi (2013) concluded that positive thinking intervention not only reduces dysfunctional attitudes, but also increases happiness. Bani Adam (2011) showed that educating positive thinking skills is influential on increasing university students happiness. Baranolady (2011) showed that hope therapy leads to increase the development motivation. Rashid (2008) in his study found that positive thinking psychology is effective to the tenacity of students. Also, Rashid and Anjam (2007) represented that positive thinking psychology is effective on the students and raised their well-being effectively and increased their happiness. Jaser et al. (2014) concluded that positive psychology with an emphasis on positive emotions and strengths, rather than problems, may be beneficial to adolescents with a chronic condition in life. Boulir et al. (2014) implied that positive psychology interventions can increase mental wellbeing and mental health, also being effective in helping to reduce depression. Altintas, E., & Ozdemir (2015) stated that differentiated approach is effective on increasing the creativity of students. As discussed, a few researches have been done in the field of training positive thinking skills on student creativity, so this study has targeted the research vacuum created. The main question of this research is that whether positive thinking training is effective on the creativity of students, or not? For this, the following hypothesis is proposed:

✓ Training positive thinking skills has a positive effect on the students's creativity.

Research methodology

Depending on the type of data collection, the current study is of quasi-experimental designs, designs of this study is pretest - posttest one with control group. The study design diagram is shown in the following table:

Table 1. Pretest-posttest design with control group

Posttest	Independent variable	Pretest
T2	X	T1
T2	-	T1

The study population had been consisted of all girl students of secondary high schools in the district 5 nonprofit education in Tehran. That of these population, one school was selected using random cluster sampling method and of the selected school, two high school classes were selected using random sampling;

one was control group class and the other formed experimental one. The number of students in each experimental and control group was 15 individuals. Methods of the study implementation was performed in a way that after necessary arrangements with selected school, accordingly two classes were randomly selected which divided in two part one as a control and another as an experimental group. Creativity pretest was done for both groups. Then, positive thinking sessions for the experimental group for 8 sessions of 90-minute duration were conducted (the summary of training package given in Table 2), but no intervention was performed to the control group. After completion of training for the experimental group, posttest creativity test was carried out for both groups. Likewise, the required data to investigate the research hypothesis was collected and then analyzed using SPSS version 20 software and the analysis of covariance (ANCOVA).

Research tool

A. Creativity Test (CT): Creativity Test has been constructed according to the Torrance theory concerning creativity in Tehran in 1984 by Abedi. Of course, this questionnaire was revised several times and finally 60-item form of it was compiled by Abedi at the University of California. This test has 60 questions of three alternatives which has been consisted of four sub-tests in fluency, elaboration, innovation and flexibility. Each item is scored from one to three which are respectively indicated in this way, one for low creativity, two for middle creativity and three for high creativity. Total of obtained scores on each subscale indicates the subject score in that section and the sum of scores of subjects in four subscales demonstrates its total creativity score. Total score creativity range was between 60 and 180 for each subject. Questions are related 1 to 22 for fluency, 23 to 33 for elaboration, 34 to 49 for innovation, and 50 to 60 for flexibility. Reliability factor has been acquired for fluency 0.85, innovation 0.82, flexibility 0.84, and elaboration 0.80 (Abedi, 1992). In a research carried out on 2270 Spanish students in order to determine the validity and reliability of the creativity measurement test, Cronbach's alpha for the subscales were obtained accordingly, fluency 0.75, flexibility 0.66, innovation 0.61 and elaboration 0.61 (Auvzmendi , villa and Abedi, 1996).

B. Summary of positive thinking skills training sessions

Table 2. Summary of positive thinking training intervention for experimental group

Number session	
first session	general discussion about meaning and concept of positive thinking, explaining the method of holding sessions, expressing goals of sessions, instruction and group introduction, a short description of coping styles and theories of coping styles
Second session	familiarity with formation of thought and outlook; to do this the theory of Adler regarding the effect of lifestyle on thought and outlook of an individual was used. Then push-button technique of Adler was described; in this regard also the theory of Rogers was used which believes that beliefs and outlooks of an individual are shaped on the basis of his/her experiences
Third session	familiarity with negative thoughts and methods of settling them, positive thought and its effect on health and longevity according to behavioral-cognitive theory; the content of this session was that before negatives thoughts come to mind, mental stress and discomfort create a series of negative thought about self and others in the mind and the more they are repeated the more they become stable in mind
Fourth session	being positive through challenging negative thoughts, changing mental images, using kind language and revision of beliefs. To realize the mentioned goals, theory of Ellis (A-B-C) was used
Fifth session	train to be positive by internalizing positive thinking strategies in life, continuation in practices of positive thinking, positive thinking opportunities and adaptability with problems that we are unable to solve them
Sixth session	training social skills
Seventh session	training method of stopping thinking and settling and changing outlooks with methods of commitment, control and challenge
Eighth	training about entering laughter into life, creating confidence, creating helpful

session	habit of sport.

(Susan Quilliam, translated by Barati and Sadeghi; Malek Mohammadi, 2014).

Research findings

Descriptive information about pretest and posttest groups are shown separately in Table 3.

Table 3: Mean and standard deviation of pre-test and post-test creativity in control and experimental groups

Test	Group		Mean		Standard deviation		Number	
Pretest	Control		128		10.19		15	
		Experiment		129		11.66		15
Posttest	Control		127		10.19		15	
		Experiment		143		10.80		15

After a brief look to the descriptive information, the inferential analysis of the findings is being discussed. In this study, statistical test of one-way ANCOVA analysis was used to investigate the research hypothesis. The reason of using this test is dated back to the fact that in current research design, researchers to control the effect of pretest preparation and adjustment of this variable of pretest used as a control variable. Before using analysis of covariance, there should be inspected some of the assumptions of the test, because not observing these assumptions likely leads the results in bias associated with the research. Pre-assumptions used in covariance analysis are included as: data normal distribution- error variances equality – homogeneity of regression lines, These three assumptions for this study were conducted to analysis of covariance. Fortunately, all three assumptions of analysis of covariance was established. That being said, utilization of covariance analysis was appropriate to analyze the data for this study. Covariance test results can be seen in Table 4.

The main research hypothesis: positive thinking skills training has a positive effect on student creativity.

Table 4: Results of posttest covariance analysis of students' creativity scores after pretest adjusting

Variation source	Sum of squares	Degree of freedom	Mean of squares	F value	Significance level
Corrected model	4073.20	2	2036.60	20.19	0.000
Intercept	1172.80	1	1172.80	11.62	0.002
Posttest	552.37	1	52.37	5.47	0.027
Group (independent variable)	1912.56	1	1912.56	18.96	0.000
Error	2723.09	27	100.85		
Total	535075.000	30			
Corrected total	6796.30	29			

Table (4) demonstrates clearly the results of covariance analysis. As is evident in the table sum of squares of the independent variable is equal to 1912.56 which contributes in the size of F test of 18.96 which this F test is significant at the one percent level. In other words, there is a significant difference between the control and experimental groups in the total creativity, even after adjusting for pretest effect. According to mean scores of experimental and control groups in posttest , it can be reached to the conclusion that positive thinking training has a positive impact on student creativity.

The hypotheses of creativity dimensions. Training positive thinking skills has an positive effect on innovation, flexibility, elaboration and fluency capacities of the students.

Table 5: Summary of covariance analysis results concerning posttest scores of students' creativity dimensions after pretest adjusting.

Variation source	Sum of squares	Degree of freedom	Mean of squares	F value	Significance level
Creativity	165.42	1	165.42	14.89	0.002
Flexibility	180.71	1	180.71	30.55	0.000
Expansion	44.82	1	44.82	5.18	0.031
Fluency	171.18	1	171.18	12.99	0.001

Table (5) shows vividly the summary of the results of covariance analysis of creativity dimensions (innovation, flexibility, elaboration, fluency). As this table represents, the sum of squares in innovation capacity is 165.42 which leads to F test amount of 14.89 that F test is significant at the one percent level. The sum of squares in flexibility is 180.71 leading to F test value of 30.55 that also F test is significant at the one percent level. Total squares of elaboration is 44.82 contributing F test in 5.8 value and being significant at the five percent level. The sum of squares in fluency is 171.18 with F value of 12.99 and being significant at the one percent level. In other words, there is also a significant difference between the control and experimental groups in the dimensions of creativity (innovation, flexibility, elaboration, fluency) even after adjusting for pretest. According to experimental and control groups in posttest mean scores, it can be concluded that positive thinking skills training has a positive impact on students' creative capabilities.

Discussion and conclusion

The analysis results in first research main hypothesis showed that training positive thinking skills has a positive impact on student's creativity and this hypothesis was confirmed with a 99% confidence level. Hence, The sub-main hypotheses related to this main hypothesis were confirmed (Table 8-4). The results of this study are consistent with the results of studies conducted by Cheraghian (2015), Dastgheib (2010), Rahravi (2013), Barkhori, Refahi and Farahbakhsh (2009), Altintas, E., & Ozdemir (2015), Boulir et al. (2013), Rashid (2008), Rashid & Anjum (2007) and Maddi (2006). Kar (2004) believes that by raising the skills and positive therapeutic interventions can increase the happiness of the people (one of the main themes of positive psychology). In a study by Seligman and colleagues (2006), Lyubomirsky ,S.& Sin (2009) carried out that the same issue prominently determined. They entered intervention therapy to treat the depressed people and increased their happiness and raised dramatically mental health and mental well-being of the participants. To explain these findings, it can be stated that the researches have showed; several preceding studies have shown that creativity can be nurtured and can be raised it using some strategies; as well as creativity and mental health are being accompanied together and without mental health developing and forming as a result of positive thinking, it is impossible for the individual to ignite the creativity. Sick and negative thinking has not the power of flight at the boundless and distant horizons. In fact, pessimist, negative thinking, disappointed and depressed, are so overwhelming in their negative thoughts that there is no way to leave thinking creativity. When a person starts work and is determined in his mind, the only factor that can distract him from his main route is the negativity and cynicism, and despair of success and fear of failure themselves raise the failure. Moreover, creative humans find a way to solve their problems with enormous energy obtaining from optimism, hope and optimism, starting working And the only thing that makes the experiment be done over and over again, and reach the success after repeated failures is hope and optimism and believing themselves ability and positive attitude, the world and those surrounding him.

According to Seligman et al. (2006) pessimism and negative thinking, because of their desperate nature would cause to stillness and result in sadness, low mood, anxiety, and loss of productivity in the work. Pessimists lacking energy and persistence necessary to do the work and put forth, they are passive and isolated. Positive thinking includes happiness, joy, positive mood, positive emotions, hope, satisfaction are such factors that cause people to show patterns of thinking themselves which improperly remarkably unusual, flexible and creative. When people are relaxed and happy their thinking is expanded, more creative and their imagination is expanded, as well. Another of the reasons mentioned to justify research results and is cited is Fredrickson's theory. According to this view, when a person is exposed to be threatened, thought-action treasure of the person is narrowed, causing persons' activities to be done

quickly and decisively. When negative emotions are raised in the person, the person tends to react special performance himself that representing the type of activity that at similar situations can increase the probability of saving the lives of human ancestors.

But positive emotions, such as happiness, optimism, hope and so forth are not taken place in life's threatening situations. So, in a situation where a person is experiencing positive emotions, psychological process that limits a person's thinking and acting treasurer and cause to swift and decisive response are not necessitated. Also, positive emotions prepare body tissue more appropriate to expand the treasury of the thoughts and actions of individuals and the person becomes a more creative-mind one by accelerating the cardiovascular healing (Fredrickson, 2003) . On the other hand, Cherie Godwin and Staples (quoted from Dastgheib, 2010) believe that the creative action, raising from the complex relationship between the left and right brain hemispheres together, makes up the elements that lead to the creativity. Added to that, researches conducted using EEG showed that there are produced more alpha waves in the human brain when relaxing and comforting, despite more Betty waves are generated when performing complex activities. Researches also indicate, however, that the brain of very creative people produces more alpha waves as doing creative activity compared to ordinary people, and this shows that such people are relaxed while doing creative activities. According to the research results above, all of the techniques that are orienting individual to calming state can be effective in creativity recovery; therefore, training positive thinking skills which can bring happiness for people optimism, positive attitude and enthusiasm, can stimulate and increase their creativity power. In explaining the findings related to the research and conducted studies connected with positive thinking, it can be stated that positive and good experiences and get feedback from other members are of the most powerful positive steps forward in recognizing the reliable abilities having been implicated in the development of creativity. In training positive thinking skills, for instance, an assignment is asked of teens to record their positive points, successes and their talents and in other words review their own. When a person becomes aware of his talents and accomplishments, this makes it not easily give up others, and rely on himself and his confidence grows, be an innovator, undermining sense of himself is decreased, gain ability and power, have less negative subjective engagements and find good sense of himself. There may participate in more activities, communicate with more people, then the attitudes of others are altered towards him and behavior better with him, subsequently, self-worth, motivation, confidence, creativity and initiative are stemmed and this is what makes the students to enhance their performance in either school life or in all areas of life. However, training positive thinking skills has a positive effect on the creative thinking strength of the students.

According to the research findings, the following **suggestions** are offered:

- ✓ The results of this study made it clear that training positive thinking skills affects the creative level of female students and increases it. In this regard, it is recommended to school counselors that if it is possible not only utilize practically these skills, but also benefit the valuable consequences of it.
- ✓ Due to the positive and constructive effect of training positive thinking skills on student behavior, it is recommended to be included this kind of training and interventions in the institutes and technical schools, and so on.
- ✓ It is recommended to be held congress and the annual meetings concerning the effects of group interventions including training positive thinking skills.
- ✓ A research to be conducted regarding creativity and introducing a training creativity model for the students.

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