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The Effectiveness of Trainings based on Neuro-Linguistic programming and Cognitive Behavioral Approach on Students' Anxiety, Depression and Stress

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Abstract

Background: The purpose of the present research was to evaluate the effectiveness of Neuro-Linguistic programming (NLP) strategies and Cognitive Behavioral Therapy (CBT) on reducing anxiety, depression and stress among students.

Methods: The present study follows a quasi-experimental design, having pretest-posttest and control group. The statistical population consists of all of the female and male teenagers within the age range of 15-18) who were studying in the second grade of high school during the 2019-2020 academic year in Kerman city. 45 individuals were chosen as the sample (group); they were divided in three groups, each group consisting of 15 individuals. The experimental group 1 was taught the guidelines of NLP in 18 sessions, 45 minutes each. The experimental group 2 was taught CBT in 6 sessions, 60 minutes each. The control group didn't receive any specific training. The instrument of the study was the anxiety, depression and stress scale of DASS-21.

Results: The findings demonstrated that NLP and CBT-based trainings had significant impacts on the decline of depression ($p < 0.05$, $n2 = 0.883$), anxiety ($p < 0.05$, $n2 = 0.846$) and Stress ($p < 0.05$, $n2 = 0.863$) among the students. Furthermore, the degrees of impact of Neuro-Linguistic programming's guidelines and CBT on anxiety, depression and stress decline among students were not significantly different ($p > 0.05$).

Conclusion: The trainings in Neuro-Linguistic programming and CBT reduced anxiety, depression and stress among teenagers and they were found to have similar degrees of impact on anxiety, depression and stress decline among students were the same.

Key Words: Anxiety, CBT (CBT), Depression, Neuro-Linguistic programming (NLP), Stress, Students, Teenagers.

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1- INTRODUCTION

The desire to change the psychological condition of children and teenagers has increased in the last two decades and may-be one of the reasons is the warning signs of the statistics which are provided for the disorders among children and teenagers (1). According to the National Institute of Mental Health's report in 2017, 20% of teenagers suffer from mental, emotional and behavioral disorders (diagnosed). The intensity of the problem in half of these teenagers was so that it affected their normal functioning and development (2). Depression is one of the most common disorders in this age (3). Depression is defined as the cold sickness among psychiatric disorders (4 and 5). Depression could lead to different kinds of physical and mental illnesses (5 and 6). Depression is a common and serious disorder which will be shown by behavior problems and the prevalence of depression disorder has been reported up to 25% (8 and 9).

According to the fifth revision of the Diagnostic and Statistical Manual of Mental, the most important disorder is depression (10 and 11). Furthermore, today the word stress is used as a modern term to express any worries or anxieties in daily life and it is a part of modern life (12). Over the past few decades, several studies have been conducted on anxiety, stress and depression among teenagers (13 and 14). These studies demonstrated that anxiety, stress and depression among teenagers could cause problems in their next stages of life (15 and 16), and in addition to their personal discomfort, it may have a negative impact on their academic and professional performance (17). Achieving psychological health and progress is a part of fundamental goals in human efforts. Therefore, the need for designing and applying new strategies to achieve these goals is inevitable. According to the above goals, researchers have tried through scientific research to propose and reconstruct methods which are based on the psychological characteristics of humans in order to improve the psychological health and the ability to make the best use of individual abilities through these efforts. In recent decades, some psychologists have developed educational methods, including modern educational therapies, under the heading of "Neuro-Linguistic programming" (NLP). This program emphasizes that human behavior depends on neurological processes; because the experience of the surrounding world affects neurological processing, it can also guide human actions (18, 19).

Another common therapy which is used to reduce psychological problems is cognitive-behavioral psychotherapy. Cognitive-behavioral therapy (CBT) is a combination of relaxation techniques and cognitive-behavioral techniques (20). Various studies have examined the effectiveness of cognitive-behavioral approach and NLP training on psychological characteristics of individuals. In a study Patrick (21) showed that the use of NLP in any of the communication levels could be effective and also it could reduce psychological problems. Hall et al. (22) demonstrated that NLP could improve human communication and also it could reduce anxiety. An extensive research by Dilts (23) has shown that NLP tools such as creating effective outputs, creating a complete future using timelines and mindfulness exercises, changing personal background, and reconstructions could be applied to help the clients. In another study, Bolstad (24) found that the concepts of NLP could be used to reduce psychological problems such as stress and depression in life. On the other hand, Harris (25) has concluded that CBT reduces anxiety. Reid et al. (26) have shown that CBT has been effective in reducing the intensity of anxiety.

According to the contents which are mentioned above, the main issue of the present study is the following question: "which of the mentioned therapies namely teaching NLP guidelines and cognitive-behavioral approach is more effective in reducing psychological problems such as stress, anxiety and depression?"

As mentioned before, most of the above-mentioned researchers have concluded that both of the therapies are effective and this could confuse therapists to choose one of them for treating anxiety, depression, and stress in clients. Cognitive psychotherapy as a common and old treatment method is common among therapists and on the other hand, NLP method has recently been considered as a relatively new method by researchers and therapists; and this could make the decision to choose one of the two therapies, more difficult. Accordingly, the present study seeks to compare the effectiveness of these two methods of treatment in similar conditions with a scientific approach and to answer the following question: "Are the effects of teaching NLP strategies and cognitive-behavioral approach different in terms of reducing students' anxiety, depression, and stress?"

2- METHOD

This research follows a quasi-experimental design, with pretest-posttest and control group. The statistical population consists of all teenagers from both genders within the age range of 15-18 who were studying in the second grade of high school during the 2019-2020 academic year in Kerman and the total number of these students was 21500. The sample for the initial screening according to Morgan table consisted of 384 individuals, among whom 45 students were chosen. The inclusion criteria were having the highest scores in the DASS-21 questionnaires and being ready to cooperate with the researcher. The participants were divided into three groups (each group consisted of 15 individuals). The experimental group 1 was trained in the guidelines of NLP in 18 sessions (each session's time was 45 minutes) and the experimental group 2 was trained based on CBT in 6 sessions (each session's time was 60 minutes); and the members of the control group didn't receive any specific training. After the training sessions, the DASS-21 questionnaires were distributed among all the three groups to test the effects of these interventions on depression, anxiety, and stress in teenagers.

2-1. Materials and Measuring Tools

Depression, Anxiety, Stress DASS-21 scale was used in this study. It has 21 items including various terms related to the symptoms of negative emotions (depression, anxiety, and stress). The depression subscale measures unhappy mood, lack of self-confidence, hopelessness, worthlessness of life, lack of motivation to engage in affairs, lack of enjoyment of life, and lack of energy and power (e.g., I feel life is meaningless). Anxiety subscale assesses hyper physiological arousal, fears, and situational anxiety (e.g., breathing is difficult for me) and the stress subscale assesses difficulty in getting calm, nervous tension, irritability, and restlessness (e.g., it is difficult for me to be calm and relaxed). After reading each phrase, the subject should rate that phrase's frequency over the past week by using a four-point scale (between 0-3). In the study of Asghari Moghadam et al. (27), the internal consistency coefficients of the three scales of depression, anxiety and stress were: 84%, 89%, and 90%, respectively. And the validity of the DASS-21 questionnaire was 0.89 (27).

Summary of NLP strategies Training Program (23)

Session one: Explanatory session

Sessions 2 and 3: Goal setting

Sessions 4 to 7: Time Management

Sessions 8 to 12: Self-Assertiveness skill

Sessions 13 to 15: Representation Systems

Sessions 16 to 18: Neurological levels

Session 1: Creating initial communication, applying methods and examining the existing problems of each group member that have caused behavioral problems, anxious thoughts or low resilience.

Sessions 2 and 3: Teaching A-B-C behavior analysis skill, group discussion and complementary activities.

Session 4 and 5: Reducing the anxiety

In this session, the therapist teaches the ways to reduce stress by finding the root causes of stress in clients and explaining its effects on various aspects of individual and social life.

Session 6: Summarizing, and explaining about the possibility of behavioral problems, anxious thoughts or low resilience after discontinuation of the treatment, as well as emphasizing on the importance of practice and continuous follow-up training during life (Cory, translated by Askari et al. 2018).

2-2. Ethical Consideration

a) Convincing the respondents to participate in the research and answer the questions of the questionnaires.
b) Not forcing the respondents to participate in the research
c) Having commitment not to disclose the respondents' information

2-3. Inclusion Criteria

a) The female and male students who were studying in the second grade of high school during the 2019-2020 academic year in Kerman.
b) Students who suffered from anxiety, depression, and stress based on the scores obtained in the DASS-21 questionnaire.
c) Willingness to cooperate with the researcher and giving written consent.

2-4. Exclusion Criteria

a) The student's absence in the training for more than two sessions.
b) Lack of student cooperation during the intervention process.
c) Parents' unwillingness to continue the student's participation in the interventional sessions.

2-5. Data Analysis

Descriptive statistical methods including frequency table, frequency percentage, average and standard deviation and inferential statistics including multivariate analysis of variance (MANCOVA) and Tukey Post Hoc test were used for data analysis in SPSS 23 software.

3- RESULTS

3-1. Demographic Characteristics

Table 1 shows that 51.1% of the respondents were girls and 48.9% were boys and the age of the respondents ranged between 15 and 18 years.

Table 2 shows the average pre-test and post-test scores in the three groups. Findings show that the averages of anxiety, depression and stress in the post-test among the training groups of NLP strategies and cognitive-behavioral approach are lower than the control group.

The Box's M test was used to examine the homogeneity of variance and covariance matrices. **Table 3** shows that the P-value is greater than 0.05 ($P < 0.05$, $f = 1.07$) and thus, the assumption of homogeneity of variance matrix and covariance of variables is confirmed.

Table-1: Frequency distribution of respondents' gender and age.

Variable	Sub-group	Number	%
Gender	Female	23	51.1
	Male	22	48.9
Age, year	15	10	22.3
	16	13	28.8
	17	12	26.6
	18	10	22.3

Table-2: Descriptive statistics of research variables in pre-test and post-test.

Variables	Group	Pretest		Posttest	
		Mean	SD	Mean	SD
Anxiety	NLP	15.73	3.769	8.67	4.152
	Cognitive-behavioral approach	15.07	3.555	9.93	3.127
	Control	15.93	2.939	14.33	2.895
Depression	NLP	15.47	3.044	7.53	2.065
	Cognitive-behavioral approach	15.93	3.127	9.07	2.313
	Control	15.13	2.503	13.47	2.475
Stress	NLP	14.87	3.502	8.67	3.20
	Cognitive-behavioral approach	14.47	3.314	10.40	2.798
	Control	15.6	2.444	14.47	2.475

Table-3: Box's Test of Equality of Covariance Matrices[a]

Box's M	14.317
F	1.068
df1	12
df2	8548.615
Sig.	0.382

The results of the Levene's test in **Table 4**, showed that the control and interventional groups had variances (P <0.05).

Table-4: Levene's Test of Equality of Error Variances

	F	df1	df2	Sig.
Posttest depression	1.556	2	42	.223
Posttest anxiety	0.297	2	42	.745
Posttest stress	0.731	2	42	.487

The results of Kolmogorov-Smirnov test (K-S) in **Table 5** shows that the p-values of depression (P = 0.285), anxiety (P = 0.555) and stress (P = 0.766) are greater than the significance level of 0.05; Therefore, the scores have a normal distributions in all three variables.

The results of multivariate analysis of variance (MANCOVA) in **Table 6** show that the trainings in both NLP strategies and CBT have significant effects on reducing anxiety depression, and stress among students (F = 47.92, p < 0.05, Lambda = 0.042, n^2 = 0.604).

The results of multivariate analysis of variance (MANCOVA) in **Table 6** show that the trainings in both NLP strategies and CBT have significant effects on reducing anxiety depression, and stress among students (F = 47.92, p < 0.05, Lambda = 0.042, n^2 = 0.604).

Table-5: One-Sample Kolmogorov-Smirnov Test

Statistics		Posttest depression	Posttest anxiety	Posttest stress
N		45	45	45
Normal Parameters[a,b]	Mean	10.0222	10.9778	11.1778
	Std. Deviation	3.38774	4.18052	3.70681
Most Extreme Differences	Absolute	.147	.119	.099
	Positive	.147	.079	.099
	Negative	-.085	-.119	-.088
Kolmogorov-Smirnov Z		.987	.796	.666
Asymp. Sig. (2-tailed)		.285	.551	.766

Table-6: Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	0.269	4.547	3	37	0.008	0.269
	Wilks' Lambda	0.731	4.547	3	37	0.008	0.269
Depression. Pretest	Pillai's Trace	0.825	58.125	3	37	0.000	0.825
	Wilks' Lambda	0.175	58.125	3	37	0.000	0.825
Anxiety. Pretest	Pillai's Trace	0.919	140.440	3	37	0.000	0.918
	Wilks' Lambda	0.081	140.440	3	37	0.000	0.918
Stress. Pretest	Pillai's Trace	0.905	117.968	3	37	0.000	0.905
	Wilks' Lambda	0.095	117.968	3	37	0.000	0.905
group	Pillai's Trace	1.080	14.878	6	76	0.000	0.479
	Wilks' Lambda	0.042	47.916	6	74	0.000	0.604

The results in **Table 7** show that the control and experimental groups in the post-test of depression ($F_{(2)}$=146.98, $p<0.05$, n^2=0.883), anxiety ($F_{(2)}$=107.34, $p<0.05$, n^2=0.846) and stress ($F_{(2)}$=122.91, $p<0.05$, n^2=0.863) were significantly different. Accordingly, the impacts of NLP and CBT training on reducing depression, anxiety and stress were 0.883, 0.846 and 0.863, respectively.

The results of pairwise comparisons of the three groups through Tukey Post Hoc test in **Table 8** show that the means of depression, anxiety and stress in the control group are significantly different with those of the experimental groups. However, there is no significant difference between the NLP and CBT in the mean scores of depression, anxiety and stress ($p> 0.05$). Since there is no significant difference between the rate of depression, anxiety and stress in the two training groups, it can be concluded that the impacts of these two interventional methods on depression, anxiety and stress are almost the same.

Table-7: Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
group	Depression. Posttest	308.610	2	154.305	146.981	.000	.883
	Anxiety. Posttest	228.817	2	114.408	107.338	.000	.846
	Stress. Posttest	203.611	2	101.805	122.912	.000	.863

Table-8: Multiple Comparisons Tukey HSD

Dependent Variable	Group (I)	Group (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Depression Pretest	Control	NLP	5.93	0.84	.000	3.9011	7.9655
		cognitive-behavioral approach	4.40	0.84	.000	2.3678	6.4322
	NLP	cognitive-behavioral approach	1.53	0.84	.171	-3.5655	0.4989
Anxiety Pretest	Control	NLP	5.67	1.26	.000	2.5948	8.7385
		cognitive-behavioral approach	4.40	1.26	.003	1.3281	7.4719
	NLP	cognitive-behavioral approach	1.27	1.26	.580	-4.3385	1.8052
Stress Pretest	Control	NLP	5.8	1.04	.000	3.2809	8.3191
		cognitive-behavioral approach	4.07	1.04	.001	1.5476	6.5858
	NLP	cognitive-behavioral approach	1.7	1.04	.228	-4.2524	.7858

4- DISCUSSION

The purpose of this study was to investigate the impacts of NLP and CBT training on reducing students' anxiety, depression and stress; and the results showed that both of the interventions have significant effects on reducing students' anxiety, depression and stress. However, there is no significant difference between the effects of these two interventional methods, and they have almost the same impacts on depression, anxiety, and stress.

These results are consistent with the findings of Harris (25) who showed that both methods of NLP and CBT were effective in reducing the anxiety among the clients and also showed that there is no significant difference between the effectiveness of the two methods. Also it is consistent with the findings of Mohammadi and Moradi (29), Isa Zadegan et al. (30), and Ehteshami Tabar et al. (31), Hall et al. (32), Reid et al. (26), Piccinin and McCurrey (33) who showed that NLP guidelines have a significant effect on reducing anxiety and also it is consistent with the findings of Yaghoubi et al. (34), Dehshiri (35) and Rashedi et al., (36) who concluded that CBT could be effective in reducing anxiety. In other words, therapies of NLP guidelines and cognitive-behavioral approach have been almost equally effective in reducing the anxiety of clients, so both therapies of NLP guidelines and cognitive-behavioral approach are effective in reducing anxiety among teenagers and the measures of the impacts are the same.

Inconsistent with our findings, some studies have found that despite both interventional methods have been effective in reducing depression among teenagers, the effectiveness of them has been significantly different; and the effectiveness of NLP guidelines on reducing depression is more than that of the CBT approach. Ehteshami Tabar et al. (31) and Patrick (21) have also revealed that NLP guidelines could reduce depression. The present study also showed that CBT has a significant effect on reducing depression. This result is in line with the findings of Faramarzi et al. (37), Rashedi et al. (36) and Chavooshi et al. (38) who concluded that cognitive-behavioral psychotherapy is effective in reducing depression.

No research was found in the literature, comparing the effectiveness of these two methods in reducing depression. Based on the findings, we could conclude that NLP treatment is more effective in comparison to the cognitive- behavioral approach. Perhaps one of the reasons is that NLP guidelines put more emphasis on human relationships, and the therapist communicates socially with the client, thereby the patient's abreaction will create wider social relationships and it encourages more conversation with those around the patient creating optimism and hope in the patient which reduces his depression. CBT and NLP-based treatments were both effective in reducing stress among teenagers. Although the effects of these two interventional methods on reducing anxiety were almost the same, NLP strategies were revealed to be more effective than CBT in reducing stress. Some studies such as Bolstad (24), Piccinin and McCurrey (34), Patrick (21) and McGive (39) have also demonstrated the effectiveness of NLP-based treatments on reducing stress. Furthermore, the present study revealed that CBT is effective in reducing stress. In the same line, Dehshiri (35), Segotas et al. (40) and Gruess et al. (41), have also shown that cognitive-behavioral therapy has impacts on reducing stress.

According to our results, NLP treatment was more effective than CBT in reducing stress. Since we could not find any other research study comparing the effects of these approaches on reducing anxiety, we might theoretically attribute this difference to the fact that NLP guidelines pay more attention to the improvement of interpersonal dynamics and systems, enhancing self-assertiveness, the use of self-hypnosis for thoughts, emotions and behavior which in turn increase the dynamics of intrapersonal and interpersonal communication systems. In addition, more physical and emotional awareness of the self and the surrounding environment, emphasized in NLP, will lead to further decline in the stress levels.

5- LIMITATIONS

a) This research has been done among anxious, depressed and stressed high school students in Kerman, so its generalization should be done with caution.

b) Lack of control over the social and economic situation of students.

c) Carrying out cross-sectional research in a period of 4 months.

6- CONCLUSION

Both the NLP and CBT-based training have a significant effect on reducing anxiety, depression and stress in students; and, there is no significant difference between the effects of these interventional methods.

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