Comparing the Effectiveness of Training Cognitive Behavioral Therapy and Neuro-linguistic Programming Strategies on Enhancing Resilience of High School Students in Kerman, Iran

Hadi Anjomshoaa[1], *Gholamrezaa Snagui Moharer [2], Mahmoud Shirazi[3]

[1]PhD Student of Educational Psychology, Islamic Azad University, Zahedan Branch, Zahedan, Iran.
[2]Assistant Professor, Department of Psychology, Islamic Azad University, Zahedan Branch, Zahedan, Iran.
[3]Associate Professor, Department of Psychology, University of Sistan and Baluchestan, Sistan and Baluchestan, Iran.

Abstract

Background

The aim of the present research was to compare the effectiveness of training cognitive behavioral therapy and Neuro-linguistic programming (NLP) strategies on mitigating anxiety, depression, and stress of students.

Materials and Methods: The method of this semi-experimental research was pretest posttest with control group. The statistical population consisted of all female and male adolescents 15-18 year-old studying in the second grade of high school in Kerman, Iran. Forty-five students with the maximum score in anxiety, depression, and stress were chosen as the sample and were randomly assigned into three 15-student groups (15 in the control group, 15 in the experimental group I, and 15 in the experimental group II). Next, experimental group I received training in neurolinguistics programming strategies as therapeutic method, while experimental group II received cognitive behavioral therapy (CBT). The instrument used in this research was DASS-21 which was completed by all three groups before the study and after the therapeutic period.

Results: The results indicated that training NLP strategies and cognitive behavioral therapy had a significant effect on reducing anxiety, depression, and stress of students ($p < 0.05$). The extent of impact of training NLP strategies and cognitive behavioral therapy had no significant effect on mitigating the students' anxiety, but it had a significant influence on reducing depression and stress; the extent of effectiveness of NLP strategies was greater than that of CBT for reducing depression and stress.

Conclusion

Based on the results, training NLP strategies and cognitive behavioral therapy had a significant effect on reducing anxiety, depression, and stress of the students. The students who received treatment through NLP and CBT experienced diminished anxiety, stress, and depression.

Key Words: Cognitive Behavioral, Effect, Enhancing resilience, Students, Neurolinguistics strategies.

Corresponding Author:

Dr. Gholamrezaa Snagui Moharer, Assistant Professor, Department of Psychology, Islamic Azad University, Zahedan Branch, Zahedan, Iran.

Email: reza.sanagoo@gmail.com

1- INTRODUCTION

Over the past two decades, interest in psychological transformation of children and adolescents has grown considerably. Possibly, one of its reasons is the alarming statistics presented about psychological disorders of children and adolescents (1). One of the important psychological issues regarding adolescents is behavioral problems. According to the National Institute for Psychological Health in 2017, out of the 20% of teenagers for whom psychological, emotional, and behavioral disorders had been diagnosed, the severity of half of them was so intense that it affected their normal development and functioning (2). In spite of advances in technologies and the possibility of easy communication and access to others within the shortest possible time as well as various facilities, today's individuals simultaneously suffer different psychological issues. One of the most common diseases of today's era is depression (3).

Depression is a serious and common disease characterized by evident mood disorder. The prevalence of depressive disorder has been reported to be up to 25% (4). Major depression leads to considerable debilitation for the person across various personal, social, and occupational areas, and affects the daily functioning of the person including eating, sleeping, and health (5). Anxiety is an unpleasant emotion and feeling developed in response to the person's perception about stress as well as physiological changes. Anxiety disorders are considered as the most common pathologies of children and adolescents (6). According to American Psychiatric Association (APA), anxiety disorders refer to a psychological state or intense arousal with the main characteristics of excessive fear, doubt, and worry. In those with anxiety disorders, the extent of fear far exceeds the level of threat or risk, meaning that the severity of fear has no logical relationship with the severity of threat. These individuals constantly see themselves in fear and worry states, without a definitive cause. This may lead to diminished occupational and social functioning of the person, and also adversely affect their relationships (6, 7). There is extensive evidence suggesting that anxiety disorders of childhood culminate in anxiety problems in adulthood in a chronic way (8, 9). Stress is an outcome of the valuation judgment process of a person about accidents and situations. When the person faces various accidents or situations, they become involved in a valuation process about that accident or situation until they understand the meaning of it, and are able to judge whether their facilities and abilities are enough to meet the environmental demands. Here, stress is the outcome of this valuation judgment process.

The symptoms resulting from stress may emerge in different forms, each of which can complicate the person's situation and make it more unbearable by affecting the psychological conditions of him or her (10). Over the past few decades, various studies have been performed on anxiety, stress, and depression of adolescents (11, 12). These studies have shown that anxiety, stress, and depression in adolescents create problems in their subsequent stages of life (13); in addition to personal distress, they may have a negative impact on their academic and occupational performance (14). One of the evident signs of anxiety, stress, and depression in adolescents is their low resilience (12). Achieving psychological health and advancing in different areas of life are part of the major objectives of human endeavors. Accordingly, novel strategies should inevitably be designed and applied to achieve these goals. Over the past few decades, some psychologists have begun to present novel training methods called Neuro-linguistic

programming (NLP). This program emphasizes that the human behavior is derived from neurological processes, since the experience of the surrounding world culminates in neuropsychological processes and guides the action (15). In addition, a wide range of human behaviors is guided and regulated through language mediation, and in this regard "language" as a second symbolic device deals with inhibiting and managing the thoughts and interpersonal relationships (16). Evidently, realization of such phenomena necessitates applying methods that help organize attitudes and behavior. These methods, known as neuro-linguistic programming, set the stage for realizing the mentioned goals (15). NLP strategy was first presented by Bandler and Grinder to propose a successful psychotherapy model.

This model was developed to create new methods of thinking and communication (17). NLP expands the self-awareness and presents new insights into mind-body relations. In this regard, awareness about representation systems, goals, beliefs, and personal values develops, and leads to other-awareness; based on these awareness levels, the person's communication skills become more efficient, and results in the development of supportive and communication networks as well as resilience (16, 18, 19).

NLP affects the psychological health of the person by developing communication networks of self-awareness and other-awareness. Under the influence of these teachings, the person considers anxiety and disease not as bitter experiences, but rather as part of their own self and a representation of the human challenge with the external world. Meanwhile, these teachings explain the philosophy of life for the person and help them in choosing ways of life (4). Another common therapeutic method used for reducing psychological problems is Cognitive Behavioral Therapy (CBT). CBT refers to a combination of relaxation techniques as well as cognitive behavioral techniques. This plan involves a combination of different types of relaxation, visualization, as well as other anxiety mitigating techniques with typical cognitive behavioral approaches such as cognitive restructuring, training in effective coping, training self-expression, and anger management (20). CBT approach is based on a coherent cognitive model and a robust therapeutic cooperation between the patient and therapist (21, 22).

Different studies have investigated the effectiveness of CBT and NLP training on psychological characteristics of people. In a research, Patrick (2017) indicated that usage of NLP at every communication level can be effective, and lead to reduced psychological problems (23). Hall (24) showed that, using NLP, human communication can be improved and anxiety can be mitigated (24).

In a research Deol (2012) showed that attention to the deep and superficial structure of the speech (the principles in NLP) can be effective in interpersonal relationships (25). Dilts' extensive research (2019) showed that NLP tools including creating effective outputs, establishing a complete future using timelines and mental exercises, changing the personal history, and reconstruction can be used to help clients (26). In another research, Bolstad (2001) found that NLP concepts can be used in mitigating psychological problems such as stress and depression (27).

Reid (2017) showed that CBT was effective in reducing the burden and severity of anxiety (28). The main problem of this research is to check which of the mentioned therapeutic methods, training NLP strategies or CBT, is more effective on reducing the psychological problems such as stress, anxiety, and depression. As mentioned earlier, most of the mentioned studies have noted both therapeutic methods as effective; yet this can confuse therapists in equal conditions to choose

one of the mentioned methods to treat anxiety, depression, and stress of clients. This is because CBT is common as an established and cognitive therapeutic method among therapists. Meanwhile, NLP has recently received the attention of many researchers and practitioners as a relatively novel method. All of these can complicate the decision-making for choosing one of these two methods. Accordingly, the present research aimed to compare the extent of effectiveness of these two therapeutic methods scientifically among high school students in Kerman city, Iran.

2- MATERIALS AND METHODS

2-1. Method

The method of this research is semi-experimental, which was performed as pretest posttest with control group. The statistical population consisted of male and female adolescents, 15-18 year-old, studying in the academic year of 2019-2020 in the second grade of high schools of Kerman city, Iran (the total number of students=21,500). The sample size for the primary screening according to Morgan table was 384, from which, 45 with the maximum score in Depression, Anxiety and Stress Scale - 21 Items (DASS-21) questionnaire who were also willing to participate in the research were chosen.

Next, these 45 individuals were randomly assigned into three groups: two experimental groups and one control group. Next, one group, as experimental group I, received 18 sessions of training in NLP strategies (each session 45 minutes). The second experimental group received CBT in six sessions once per week, each session lasting 60 minutes. The members of the control group did not receive any special training or treatment throughout this period. By the end of the training sessions, all three groups completed DASS-21 questionnaire, in order to examine the effect of these trainings on the

resilience of the tested teenagers. To analyze the research hypotheses, multivariate analysis of variance (MANCOVA) was used through SPSS software version 16.0. P-value less than 0.05 was considered statistically significant.

2-2. Inclusion criteria

- Students studying in high schools of Kerman city.
- Students with anxiety, depression, and stress based on the scores obtained in DASS-21 questionnaire.
- Willingness to cooperate with the researcher and signing informed consent form.
- Physical and psychological ability of the teenager to participate in the educational courses.

2-3. Exclusion criteria

- Absence of the student in the educational courses for more than two sessions.
- Lack of cooperativeness of students in the trainings.
- Unwillingness of parents to continue the student education.

2-4. Data collection instrument

In this research, depression, anxiety, and stress scale (DASS-21) (28) was used. This questionnaire has 21 items, composed of statements associated with negative effect symptoms (depression, anxiety, and stress). The depression subscale measures unhappy mood, lack of self-confidence, despair, seeing life as valueless, no interest in getting involved in activities, no joy of life, and lack of energy and power (for example: I feel life is meaningless). The anxiety subscale evaluates physiological hyper-excitement, fears, and situational anxiety (for example: breathing becomes difficult for me). Finally, the stress subscale assesses difficulty in achieving relaxation, nervous tension, irritability, and

restlessness (for example: relaxation and remaining relaxed are difficult for me). After reading each statement, the subject should rank the frequency of that statement over the past few weeks using a four-point scale (0-3). In the study by Asgharimoghadam et al., the internal consistency coefficients of the three scales of depression, anxiety, and stress were 84%, 89%, and 90%, respectively. In this research, the reliability of the body image questionnaire using Cronbach alpha method was obtained as 0.84. The validity of DASS-21 questionnaire in the research by Asghari Moghaddam et al. was obtained as 0.89 (29).

2-5. A summary of the program of NLP strategic training

Session I: Briefing session. The aim of this session is to become familiar with the subjects' characteristics, goals, values, and to provide suitable feedback to the traits related to each subject. In this session, definition of NLP and its benefits in life were presented.

Sessions II and III: **Goal setting**. After stating the necessity and importance of "goal setting", the subjects were asked to express their opinion about goal setting. This stage began with posing challenging questions to stimulate the subjects. Next the subjects were encouraged to think about their goals and note them down on paper. Some forms were provided to the subjects in order to list and then prioritize their goals based on the time of achieving them. In another part of this stage, SMART model and the stages of goal achievement were presented. After assessing the goals, the subjects found how they can choose their goals based on this model. Finally, some exercises were provided to the subjects as homework.

Sessions IV-VII: **Time management**. In the fourth session, after reviewing the exercises of the previous session, the participants became familiar with time management. After presenting different timelines, the trainer, by creating mental challenges, attempted to highlight the importance of time management. Next, a piece of paper was provided to the subjects so that they could prioritize their goals based on that for the fifth session. **In the sixth session**, a daily planning form for outside school was provided to the subjects. After considering the daily program, the participants were asked to determine what they should do in the week and write it in the relevant form. **In the seventh session**, some strategies were presented to tackle disturbing factors preventing the progress of plans. Next, for further exercise, some forms were provided to the subjects as homework.

Sessions 8-12: **Self-expression skills**. After reviewing the homework, by posing questions, the trainer made the participants aware of the importance of acquiring self-expression skills. Skills such as "how to request", "saying yes", and "saying no" were trained. Also, some explanations were given about the reasons preventing self-expression and requesting. The participants responded to the questions mentioned in the relevant forms. In addition, in order to practice the self-expression skills in the class, the participants were placed in different situations. At the end of each session, the forms related to homework for the area of interest were provided to the subjects.

Sessions 13-15: **Representation systems**. In this section, the goal was familiarizing the participants with representation systems as well as verbal and nonverbal communication. After investigating the homework, the necessity of becoming familiar with representation systems of mental experience and world perception through the five senses was examined. Next, some forms were provided to the participants, whereby they became familiar with the eye movements of people as well as verbal indicators. After completing the

form and responding to its questions, the top representation systems of participants were found. Accordingly, the participants were categorized into two-member groups, and they practiced the representation systems. Next, proper learning strategies were provided to them based on the sensory priorities of each group. At the end of this section, the participants were able to identify their own and others' representation system, and then they began practicing effective communication.

Sessions 16-18: **Neurological levels**. This section deals with personal changes and establishing coordination between various neurological levels (environment, behavior, competence, belief, identity, and spirituality). The trainer talked about how these levels are interrelated. By asking questions and presenting examples, the trainer asked the subjects to answer him for better understanding the levels and determining their status at each level. Thereafter, a form containing relevant questions was provided to the subjects in order to be completed for the next session. In subsequent sessions, by performing practical exercises in the class, the subjects learned how to identify the problem, and then to succeed by establishing coordination between different levels.

2-6. Summary of the cognitive behavioral therapy method

Session 1: Establishing initial communication, method, and examining the problems in each of the group members causing incidence of behavioral problems or anxiety-laden thoughts or low resilience. All group members should practically participate in all stages of this session and especially in the familiarization stage. They could sit anywhere and in any way they wished. Sitting in the session should be such that no one has superiority over the others, and even the place the therapist sat should not be such that it reflects on him as being separate, distinct, or superior. Indeed,

circular sitting was emphasized. After introducing himself, the therapist talked to every individual member of the group and became familiar with them. The important thing was understanding the response reaction of each member to identify the situation in which all of them are involved and are important. The therapist asked the group members to talk about their problem(s) directly individually. At this stage, the therapist should clearly focus on the problem(s) propounded by the members. The therapist carefully listens to their problems explained. In the next stage, the members interact with each other, where the question about the problem had two stages: the first is acquiring the opinion of all members. In the second stage, the group members are encouraged to interact with each other about their problem(s), and try to find practical and logical solutions to solve the problem(s). Attempts are made to motivate the subjects to listen to each other and pay attention to the solutions offered.

Sessions 2 and 3: Training behavior analysis skill (A-B-C), group discussion, and presenting supplementary activities. The aim of this intervention is to train clients so that they are able to analyze their inefficient behavioral patterns. They would also be able to analyze other more adaptive behavioral patterns they express with others or that the therapist suggests. The clients were trained to use the simple A-B-C method for behavior analysis. They were asked to elaborate on their response patterns or maladaptive behaviors. They were then requested to use the following form to describe their personal behavior and identify the events that occur before and after their responses, and describe the consequences of their responses and write them down.

C	B	A
Consequences	Behavior	Trigger events

The reported precedents and antecedents can be a description of important responses, environmental events, or personal emotional or cognitive behaviors of subjects (such as anger, worry, depression, unpleasant feelings). The therapist should help the group members gain awareness about the events, thoughts, or emotions triggering their anger.

Sessions 4 and 5: Stress management. In this session, the therapist taught stress mitigation solutions to the subject through finding the root cause of the stress in the clients and by explaining its impact on different aspects of personal and social life.

Session 6: Conclusion, explanation about the possibility of behavioral problems, or anxiety laden thoughts, or low resilience after treatment cessation, and emphasizing practice as well as constant follow-up of trainings in life (21, 22).

3- RESULTS

3-1. Descriptive findings

Table. 1 reports the mean scores of anxiety, depression, and stress in the pre- and posttest for the three groups of training NLP strategies, CBT, and control group. In order to test the normality of the distribution of scores, Kolmogorov Smirnov test (K-S) was used. The results indicated that the distribution of scores had a normal distribution across all three variables of depression, stress, and anxiety.

Table-1: Descriptive statistics of anxiety, depression and stress of students in the study groups in pre-test and post-test.

Variables	Study groups	Pre-test	Post-test
		Mean (SD)	Mean (SD)
Anxiety	NLP strategies	15.73 (3.76)	8.67 (4.15)
	CBT	15.07 (3.55)	9.93 (3.21)
	Control	15.93 (2.93)	14.33 (2.89)
Depression	NLP strategies	15.47 (3.04)	7.53 (2.06)
	CBT	15.93 (3.12)	9.07 (2.31)
	Control	15.13 (2.50)	13.47 (2.47)
Stress	NLP strategies	14.87 (3.50)	8.67 (3.20)
	CBT	14.47 (3.31)	10.40 (2.79)
	Control	15.60 (2.44)	14.47 (2.47)

SD: Standard deviation, NLP: Neuro-linguistic programming, CBT: Cognitive behavioral therapy.

3-2. Hypothesis 1

Training NLP strategies and CBT is effective in reducing anxiety, depression, and stress of students.

3-2-1. Multivariate analysis of variance (MANCOVA)

For hypothesis test, MANCOVA was used, with its results shown in **Table. 2**. Thus, it can be stated that training NLP strategies and CBT has had a significant effect on reducing anxiety, depression, and stress as well as increasing the resilience of students. The results obtained in **Table.3** indicate that the control and experimental group had a significant difference with each other in the post-test of depression, anxiety, and stress. In other words, training NLP strategies and CBT together has had a significant effect on the linear combination of anxiety, depression, and stress of students.

Table-2: Pearson correlation test statistics related to the relationship between depression, anxiety and stress in participating students.

Variables	Depression	Anxiety	Stress
Depression	1	-	-
Anxiety	0.429	1	-
Stress	0.459	0.36	1

Table-3: Results of MANCOVA test to evaluate the effect of NLP and CBT on reducing anxiety, depression and stress in participating students.

Effect	Test	Value	F	DF	Error DF	P-value	η^2
Depression post-test	Pillai's trace	0.82	39.77	4	35	0.001	0.82
	Wilks' Lambda	0.18	39.77	4	35	0.001	0.82
Anxiety post-test	Pillai's trace	0.92	101.84	4	35	0.001	0.921
	Wilks' Lambda	0.07	101.84	4	35	0.001	0.921
Stress post-test	Pillai's trace	0.90	82.70	4	35	0.001	0.904
	Wilks' Lambda	0.09	82.70	4	35	0.001	0.904
Group	Pillai's trace	1.15	12.24	8	72	0.001	0.576
	Wilks' Lambda	0.01	60.12	8	70	0.001	0.873

DF: Degree of freedom, NLP: Neuro-linguistic programming, CBT: Cognitive behavioral therapy.

3-3. Hypothesis 2

The extent of the effect of training NLP strategies and CBT differs on reducing anxiety, depression, and stress of students. The results obtained from MANCOVA are reported in **Table. 4**. Hence, it can be stated that training NLP strategies and CBT have a significant effect on reducing the anxiety, depression, and stress of students.

Table-4: MANCOVA test results to compare anxiety, depression and stress in participating students.

	Variables	Total sum of squares	DF	Mean sum of squares	F	P-value	η^2
Groups	Depression post-test	306.92	2	153.46	142.46	0.001	0.882
	Anxiety post-test	225.08	2	112.54	105.20	0.001	0.847
	Stress post-test	200.48	2	100.24	120.08	0.001	0.863

DF: Degree of freedom.

The results obtained in **Table. 5** show that the control and experiment of the group have a significant difference with each other in the posttest of depression, anxiety, and stress. Based on Eta coefficient, the effect of training NLP strategies and CBT is 0.564, 0.354, and 0.44 in mitigating depression, anxiety, and stress, respectively. The results obtained from paired comparison of the three groups through post hoc Tukey test indicated that the mean difference of depression between the control group and the group involving NLP strategies is 5.03, as well as the mean difference between the control group and CBT which is 4.4. The mean difference of depression score between the NLP strategies and CBT group is 1.53, with significance of 0.171, and larger than 0.05 (p>0.05). Thus, there is no significant difference between the two experimental groups regarding depression, and the

extent of effectiveness of these two interventions on depression has remained almost the same. The results obtained from paired comparison of the three groups through post hoc Tukey test indicated that the mean difference of anxiety between the control group and the group involving NLP strategies is 5.67, as well as the mean difference between the control group and CBT, 4.4. The mean difference of anxiety score between the NLP strategies and CBT group is 1.27, the significance was 0.58, and larger than 0.05 (p>0.05). Thus, there is no significant difference between the two experimental groups regarding depression, and the extent of effectiveness of these two interventions on depression has remained almost the same. The results obtained from paired comparison of the three groups through post hoc Tukey test indicated that the mean difference of stress between the control group and the group involving NLP strategies is 5.8, as well as the mean difference between the control group and CBT which is 4.07. The mean difference of stress score between the NLP strategies and CBT group is 1.73, with significance of 0.228, and larger than 0.05 (p>0.05). Thus, there is no significant difference between the two experimental groups regarding depression, and the extent of effectiveness of these two interventions on depression has remained almost the same (**Table. 6**).

Table-5: Results of MANCOVA test to evaluate the effect of NLP and CBT on reducing anxiety, depression and stress in participating students.

	Variables	Total sum of squares	DF	Mean sum of squares	F	P-value	η^2
Groups	Depression post-test	284.58	2	142.29	27.11	0.001	0.564
	Anxiety post-test	265.38	2	132.69	11.07	0.001	0.345
	Stress post-test	265.91	2	132.96	16.49	0.001	0.440

DF: Degree of freedom.

Table-6: Tukey post hoc test to evaluate the effect of NLP and CBT on reducing anxiety, depression and stress in participating students.

Post-test	Group	Mean difference	Standard error	P-value	95% CI	
					Lower	Upper
Depression	NLP	5.93	0.836	0.001	3.90	7.96
	CBT	4.40	0.836	0.001	2.37	6.43
	NLP+ CBT approach	1.53	0.836	0.171	-0.499	3.56
Anxiety	NLP	5.67	1.26	0.001	2.59	8.74
	CBT	4.40	1.26	0.003	1.33	7.47
	NLP+ CBT approach	1.27	1.26	0.58	-1.80	4.34
Stress	NLP	5.80	1.04	0.001	3.28	8.32
	CBT	4.07	1.03	0.001	1.55	6.58
	NLP+ CBT approach	1.73	1.04	0.228	-0.78	4.25

95% CI: 95% Confidence Interval, NLP: Neuro-linguistic programming, CBT: Cognitive behavioral therapy.

4- DISCUSSION

The aim of the present research was to compare the effectiveness of training NLP strategies and CBT on mitigating anxiety, depression, and stress of students in high school. Based on the obtained results, training NLP strategies and CBT had a significant effect on reducing anxiety, where the students undergoing treatment with NLP experienced diminished anxiety after the treatment course. These results are in line with the findings of previous studies (24, 28-33). The results showed that training in NLP strategies had a significant effect on reducing depression of students, where the students undergoing treatment with NLP showed reduced depression after the treatment course. These results concur with the findings of Ehteshami Tabar et al. (32), Patrick (23), and Reding et al.'s (33). According to the results, training in NLP strategies had a significant influence on reducing stress of students, with the students receiving NLP treatment experiencing less stress. These findings are concordant with the findings of Reding et al. (33), Bolstad (27), Piccinin et al. and McCarie (34, 35), Patrick (23), and McGive (34).

According to the results, CBT had a significant impact on mitigating the anxiety of students. These results match the findings of Yaghubi et al. (36), Dehshiri (37), and Rashedi et al. (38); based on the results of the present research and previous studies, it can be stated that CBT is considered an effective method for reducing anxiety especially among adolescents. Based on the findings of the present research, CBT has had a significant influence on reducing depression of students; those students receiving CBT experienced less depression at the end of the treatment course. These results are in line with the findings of Faramarzi et al. (39), Rashedi et al. (37), and Ranjbar et al. (1). The results of the present research showed that CBT has had

a significant effect on mitigating the stress of students; in the posttest, there was a significant difference between the control and experimental group regarding stress level, with the latter group experiencing notably less stress. These findings concur with the results of Dehshiri (37), Segotas et al. (40), and Gruess et al. (41). Based on the findings of the present research, there was no significant difference between the two experimental groups regarding the level of anxiety, and the extent of effectiveness of these two interventions was almost the same on anxiety mitigation. These results are in line with the findings of Ehteshami Tabar et al. (32), Reding et al. (33), Hall (24), Reid (28), and Piccinin et al. (34) who showed that NLP strategies had a significant effect on anxiety mitigation, as well as with the findings of Yaghubi et al. (36), Dehshiri (37), Rashedi et al. (37), that concluded CBT can be effective for anxiety mitigation. Based on the results of the present research, there was a significant difference between the two experimental groups regarding depression level, where NLP strategies were more effective than CBT on depression mitigation.

Based on these findings, NLP strategies have been effective for reducing depression, which is in line with the findings of Ehteshami Tabar et al. (32), Patrick (23), and Reding et al. (33), which showed that NLP strategies cause diminished depression. The results of the present research suggested that there was a significant difference between the two experimental groups regarding stress, where training in NLP strategies was more effective than CBT for stress mitigation. Accordingly, training in NLP strategies has been effective for stress management, with these findings concurring with the results of Reding et al. (32), Bolsted (27), Piccinin (34), Patrick (23), and McGive (35). Also, the results of the present research showed that CBT was effective

for stress mitigation, which is in line with the findings of Dehshiri (37), Segotas et al. (39), and Gruess et al. (41), which showed that CBT is effective for stress management.

4-1. Limitations of the study

- Limitation in data collection method: the instrument used was a questionnaire, and the subjects may not have reflected the realities for different reasons. To resolve this shortcoming, interview or observation or other methods if possible could have been used, which was not possible due to time, resources, and facilities constraints.
- Not controlling all confounding factors such as socioeconomic base, behavioral problems, type of personality, etc.
- Conducting the study as cross-sectional, thus complicating the generalizability of the results.
- Absence of research on concurrent comparison of the effectiveness of NLP strategies and CBT on reducing psychological and behavioral problems; this limitation reduced the comparability of the results of the present research with other similar studies.

5- CONCLUSION

According to the results, training NLP strategies had a significant effect on reducing anxiety, depression, and stress of students. The students receiving NLP treatment experienced less anxiety, stress, and depression after the treatment course. The results also showed that CBT had a significant influence on mitigating anxiety, depression, and stress of students, and those receiving CBT experienced less depression, anxiety, and stress. The results also indicated that there was a significant difference between the two experimental groups regarding level of depression,

where training NLP strategies was more effective than CBT on mitigating depression. Based on the results, there was a significant difference between the two experimental groups regarding stress, where again training in NLP strategies was more effective than CBT on stress management. On the other hand, there was no significant difference between the two experimental groups regarding anxiety, and they were equally effective for anxiety mitigation.

6- CONFLICT OF INTEREST: None.

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