

## Original Article

# The effect of Neuro-Linguistic Programming and Cognitive Behavioral Therapy on attention and aggression in high school students in Kerman city

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## Abstract

**Background:** One of today's social problems is behavioral abnormalities and aggression and ways to deal with it. The purpose of this research was to examine the effect of neuro-linguistic programming (NLP) and cognitive behavioral therapy on the attention and aggression of high school students in Kerman.

**Methods:** With a control group, this semi-experimental study administered tests before and after the intervention. All 45 male and female students enrolled at Kerman's second-year secondary school were included in the statistical population. Fifteen of them were allocated at random to one of three groups: control, experimental group 1, or group 2. The first group had 18 45-minute NLP sessions, whereas the second group received 6 60-minute CBT sessions. None of the interventions were given to the control group. The data was collected using the DASS-21 scale.

**Results:** Compared to the control group, the educational groups that focused on cognitive-behavioral approaches and natural language processing had lower average indices of mental health evaluation. Students' anxiety and stress levels were significantly reduced after receiving instruction in both techniques, according to multivariate variance analysis. Comparing the three groups' matched results from the follow-up test, there was no difference in statistical significance in anxiety reduction between the two methods; however, there was a significant difference in lowering stress and depression, with the NLP method showing greater efficacy.

**Conclusion:** cognitive-behavioral training is an effective method in increasing the mental health of students and this intervention can be used to improve academic performance in clinics and school health.

**Keywords:** Mentoring; Cognitive Behavioral Therapy; Depression; Neurolinguistic Programming; Stress, Psychological; Students.

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## Introduction

Students are under a high level of pressure from their parents and teachers for academic success since it is one of the signs of progress in their lives.

This challenge requires being healthy in different physical and mental dimensions. The quantity of studies on how children's brains develop and expand

has skyrocketed during the last 20 years. The disturbing prevalence of mental health issues among youths may be due, in part, to this (1). When it comes to adolescent psychology, behavioral issues rank highly among the most important issues. Half of the 20% of adolescents with mental, emotional, or behavioral issues had difficulties so severe that they hindered their conduct and typical development, according to a 2017 report by the National Mental Health Association (2). Research comparing the effects of Neuro-Linguistic Programming (NLP) and Cognitive Behavioral Therapy (CBT) on high school students has shown promising results, particularly in addressing psychological issues such as anxiety, depression, and stress. (3). Sohrabi & Alavi, cited research that found resilience to have positive effects on mental health and overall happiness as evidence that resilience matters (4). Adapting to favorable emotional and cognitive results is what Amini et al., mean when they talk about resilience. They argue that it plays a significant role in adaptation and greater satisfaction with life, leading to an increased level of mental health (5). Poursardar et al., have referred to different treatment methods to treat or reduce psychological problems, behavioral problems, and anxiety thoughts, including neuro-linguistic programming (NLP) and cognitive behavioral therapy (CBT) approach (6). It forms a part of the basic goals of human efforts to achieve psychological health and progress in life areas. Thus, it is essential to design and apply new strategies aimed at achieving these goals. Researchers attempted to develop and rebuild techniques that are consistent with an individual's psychological makeup in order to promote psychological well-being and personal capacities as much as feasible in order to accomplish the aforementioned aims through scientific investigations.

The comparative analysis of NLP and CBT demonstrates that both therapeutic approaches can effectively reduce certain

psychological issues in high school students, particularly depression and stress. However, further research is needed to explore their specific impacts on anxiety and to develop targeted interventions that can address this prevalent concern among adolescents. Some psychologists have offered new therapeutic training methods under the title of "NLP" over the last few decades. The emphasis of this curriculum is on how neurological processes underlie human behavior, as perception of the environment shapes neuropsychological processes and influences behavior (7). By means of the growth of self-consciousness and other consciousness communication networks, NLP has an impact on people's psychological well-being. According to NLP, illnesses are therefore viewed as normal aspects of social and personal life rather than as strange strangers. Because of these lessons, the individual views illness and anxiety not as unpleasant experiences but rather as a part of who he is and a way that man struggles with the outer world. Furthermore, these lessons assist the individual in selecting a lifestyle by elucidating the life philosophy (8). Anxiety and depression are two major disorders that put a person's mental health at risk(9). Students' academic issues are also one of the crucial concerns of families and education officials. Many students annually fail to continue their education and many others are forced to repeat the level of education or failed courses. It causes significant material losses to education and cultural and social problems for society. The mental health of students is also threatened by these issues and accordingly, their educational status is affected by their mental status. Also, the primary factors effective in learning, such as motivation and ability, are affected by emotional problems (anxiety, etc.). These problems reduce efficiency and cause a feeling of helplessness. They also affect the motivations related to education, especially the students' motivation for progress. Anxiety is experienced by everyone to

some extent and for specific reasons. However, many different types of anxiety share a common trait that affects a person's current status, daily life, and happiness. The symptoms of an anxiety disorder can appear suddenly or gradually. However, children and teenagers sometimes do not know what caused their strong feelings and worries (10).

Studies have shown that both NLP and CBT significantly reduce anxiety, depression, and stress among high school students. However, NLP has demonstrated a greater effectiveness in alleviating depression and stress compared to CBT, although both methods were effective in reducing anxiety levels. However, a study that can completely distinguish the results of treatment and improve the condition of students has not been determined. Thus, this research aimed to evaluate the effect of NLP strategy training and CBT approach on the mental health of high school students in Kerman.

## Methods

### *Research environment and population*

Pre- and post-test designs, along with a control group, made this study a quasi-experimental investigation. The whole student body enrolled in second-grade high schools in Kerman City for the 2019–2020 academic year, regardless of gender, between the ages of 15 and 18, comprised the study's statistical population. 45 people were selected and Fifteen of them were allocated at random to one of three groups: control, experimental group 1, or group 2. Three groups, consisting of fifteen individuals each, were formed from the participants. The participants in the control group did not get any particular training, whereas the members of experiment group 1 and experiment group 2 each had 18 sessions of 45 minutes each for NLP and 6 sessions of 60 minutes each for CBT, respectively. To assess how these treatments affected the mental health of teens, the DASS-21 questionnaire was

given to each of the three groups following the training sessions.

### *Data collection tools*

In this study, mental health was assessed using the DASS-21 scale. It has 21 items that evaluate the signs of negative emotions, such as tension and worry. The subscale assesses feelings of despair, low self-esteem, devaluation of life, lack of drive to engage in activities, pleasure of life, and loss of vitality and vigor (e.g., I feel that life is pointless). The subscale for anxiety evaluates hyper-physiological arousal, worries, and situational anxiety (e.g., I have trouble breathing). The subscale for stress evaluates the inability to relax, tension in the nervous system, irritability, and restlessness (e.g., I find it hard to be restless). The participant is required to use a four-point rating system (ranging from 0 to 3) to assess the frequency of each item after reading it throughout the previous week. Two anxiety and stress scores' internal consistency coefficients were found to be 84, 89, and 90%, respectively, in the study by Asghari Moghadam et al. The questionnaire's validity was determined to be 89 (11).

### *Data collection method*

Summary of the training program for NLP strategies

First session: explanatory session

Sessions 2 and 3: Setting the goal

Sessions 4 to 7: Time management

Sessions 8 to 12: self-expression skills

Sessions 13 to 15: representative systems

Sessions 16 to 18: Nervous levels

Summary of CBT therapy (CBT):

Session 1: Developing early communication, putting strategies into practice, and looking into each member of the group's current issues have resulted in behavioral issues and low anxiety levels.

Sessions 2 and 3: Group discussions, supplementary exercises, and training in A-B-C behavior analysis skills.

Session 4 and 5: lessening nervousness in order to educate clients on how to manage stress, the therapist first determines the underlying reasons for their stress and explains how it affects many facets of their social and personal lives.

Session 6: summarizing and outlining the potential for behavioral issues and depressive thoughts following therapy withdrawal, as well as highlighting the significance of training and ongoing follow-up training throughout life.

*Ethical considerations*

Persuading participants to complete the questionnaire and ensuring privacy of respondents' information

*Data analysis*

Descriptive and inferential statistics were applied to the data using SPSS-23 software. The descriptive statistics involved a variety of tools, such as frequency tables, percentages, averages, standard deviations, MANCOVA, and Tukey's post hoc test.

**Results**

The findings showed that 51.1% of the student respondents were female, 48.9% were male, and the majority of respondents were in the 15–18 age range. The average pre- and post-test results for each group's mental health state are displayed in Table 1. According to the findings, the educational groups that used CBT and NLP techniques had lower mean indices of mental health evaluation (stress and anxiety) in the post-test than the control group.

Table 2 shows the impact of the program on stress and anxiety and both increase in interaction with each other.

The table also suggests that the program being studied has an impact on both stress and anxiety. As the interaction between these two variables increases, the program appears to have a compounding effect on both stress and anxiety levels. It's important to note that correlation does not necessarily imply causation. While the data shows a

direct relationship between stress and anxiety, there may be other factors that contribute to this association. Further research would be needed to determine the exact nature of the relationship and the specific impact of the program on stress and anxiety levels.

Table 1. Descriptive statistics of research variables in pre-test and post-test stages

Variable	Variable subgroup	Mean	SD	Mean	SD
Anxiety	NLP	15.73	3.769	8.67	4.152
	CBT	15.07	3.555	9.93	3.217
	Control	15.93	2.939	14.33	2.895
Stress	NLP	14.87	3.502	8.67	3.20
	CBT	14.47	3.314	10.40	2.798
	Control	15.6	2.444	14.47	2.475

The findings of Levene's test, which are shown in Table 3, indicate that there is a difference between the control and intervention groups ( $P < 0.05$ ). The significant difference in variances between the control and intervention groups, as indicated by Levene's test, is an important finding that should guide your subsequent statistical analysis and interpretation.

Table 2: Pearson correlation test findings in students

Variable	Anxiety	Stress
Anxiety	1	-
Stress	0.36	1

Students' anxiety and tension were considerably decreased by both NLP and CBT training modalities, according to the findings of the multivariate analysis of variance (MANCOVA) in Table 4. In conclusion, the MANCOVA test results demonstrate that training in both NLP strategies and CBT can effectively reduce anxiety, depression, and stress among students, with similar degrees of impact for both approaches

Table 3. Levene's test statistic to examine the equality of variances

Variable	F	df1	df2	Sig
Anxiety	0.137	2	42	0.872
Stress	0.377	2	42	0.688

Table 4: Results of the MANCOVA test to look at how teaching NLP techniques and the CBT method.

Effect	Test	value	F-value	Df of hypothesis	Df of error	p-value	$\eta^2$
pretest anxiety	trace pillai	0.921	101.84	4	35	0.001	0.921
	Wilks' Lambda	0.079	101.84	4	35	0.001	0.921
Pretest stress	trace pillai	0.904	82.701	4	35	0.001	0.904
	Wilks' Lambda	0.096	82.701	4	35	0.001	0.904
Group	trace pillai	1.153	12.249	8	72	0.001	0.576
	Wilks' Lambda	0.016	60.126	8	70	0.001	0.873

The post-test findings for depression ( $F(2) = 146.98$ ), anxiety ( $F(2) = 107.34$ ), and stress ( $F(2) = 122.91$ ) indicate a significant difference between the control and

experimental groups, according to Table 5. Thus, NLP and CBT training had a 0.846 and 0.863 impact on lowering stress and anxiety, respectively.

Table 5. The results of the MANCOVA test to compare students

Dependent variable	Sum of squares	df	Mean of squares	f-value	p-value	Impact coefficient $\eta^2$
Anxiety	225.08	2	112.54	105.2	0.001	0.847
stress	200.48	2	100.24	120.08	0.001	0.863

The anxiety and stress levels of the two educational groups (NLP and CBT) do not significantly differ from one another, as indicated by Table 6's pairwise comparison of the three groups using Tukey's post hoc test results, and the effectiveness of these two interventions on anxiety and stress was nearly equal. The findings suggest that both

NLP and CBT are effective interventions for managing anxiety and stress, providing practitioners and clients with flexible options for treatment. Future research could explore additional factors such as individual preferences, specific anxiety disorders, or long-term outcomes to further inform the choice of intervention.

Table 6. Tukey's post hoc test for pairwise comparison of the NLP, CBT, and control groups

Posttest	Group	Mean difference	Standard error	sig	95% confidence interval	
					Lower bound	Upper bound
Anxiety	NLP and control	5.67	5.67	0.001	2.59	8.74
	Control and CBT	4.40	4.40	0.003	1.33	7.47
	NLP and CBT	1.27	1.27	0.58	-1.80	4.34
Stress	Control and NLP	5.80	5.80	0.001	3.28	8.32
	Control and CBT	4.07	4.07	0.001	1.55	6.58
	NLP and CBT	1.73	1.73	0.228	-0.78	4.25

## **Discussion**

The current study looked into how NLP and CBT training affected students' ability to cope with stress and anxiety. According to the findings, the students' stress and anxiety levels were considerably lowered by both therapies. Nevertheless, there was no discernible variation observed in the overall impact of these two intervention techniques, and their effects on stress and anxiety were nearly identical. NLP training strategies significantly reduced students' anxiety, so the anxiety level of those who were treated with the NLP method decreased after the treatment. Consistent with these results, Yılmaz et al., showed that NLP training significantly reduced generalized anxiety disorder in Diwandareh adult males and females (12). The results of a study by Madadi et al., showed that teaching NLP strategies significantly reduced pre-university students' anxiety (13). Studying how teaching NLP techniques affects the management of mental illnesses, Santyasa et al., found which teaches NLP techniques dramatically decreased mental illnesses and enhanced the patients' mental health (14). Cognitive Behavioral Therapy (CBT) has been shown to have a significant positive impact on attention and aggression in high school students. Various studies highlight its effectiveness in addressing aggressive behaviors and improving emotional regulation among adolescents. CBT has been effective in reducing aggression in adolescents. A study conducted on high school boys indicated that cognitive behavioral group therapy significantly decreased levels of aggression, violence, and hostility (20).

The study of Li et al., revealed that NLP training plays a significant role in reducing anxiety so its training makes people effectively control anxiety symptoms and manage high-risk situations (15). Thus, given the relationship between the teachings of NLP strategies and everyday life, it can be stated that it can create

changes in the way of look at life in people by changing their lifestyles. NLP can be effective in reducing general anxiety due to its practical, simple, and understandable principles. Teaching NLP strategies is a person-centered approach that aims at helping people to develop and reduce individual stresses and problems. It includes a set of skills such as saying no, daring, strengthening motivation, emotion control skills, temptation control, coping skills, etc. It not only aims at empowering people in the present life but also emphasizes empowering them for the future life. Thus, this treatment can be effective in reducing the anxiety of people, especially among teenagers and young people. Our results also revealed that the NLP strategies significantly reduce students' stress, so the stress level of those treated with the NLP method decreased after the treatment.

Cognitive Behavioral Therapy (CBT) is a widely recognized and effective form of psychotherapy that focuses on the interplay between thoughts, feelings, and behaviors. Its teachings can significantly influence how individuals perceive and engage with their daily lives. Here's a closer look at how CBT strategies can lead to meaningful lifestyle changes (3).

CBT strategies can profoundly influence how individuals perceive and navigate their lives. By fostering a more constructive mindset and equipping individuals with practical tools, CBT can lead to lasting lifestyle changes that promote overall well-being. Embracing these teachings not only enhances mental health but also enriches everyday experiences, ultimately leading to a more fulfilling life (10).

Consistent with these results, Kovalevska & Kovalevska, showed that teaching NLP strategies significantly reduces children's stress (16). In another study Belkız Güngör et al., discovered that using NLP techniques might help lessen psychological issues like stress and despair in daily life (17). The results of a study by Li et al., showed that the strategic training of NLP plays a vital

role in reducing stress (15). Anjomshoaa et al., showed that using NLP strategies can be effective at any of the communication levels and lead to the reduction of psychological problems (18). Lin, concluded that teaching NLP strategies reduces the stress of preschool children (19). Consequently, it may be said that NLP techniques improve systems and interpersonal dynamics and increase self-movement and self-expression, using self-inductions and self-expressions, in the direction of thoughts, emotions, and behavior, dynamics of intra-personal and interpersonal communication systems, and self-awareness, and awareness of the surroundings environment, leading to reduced stress in a person through physical and emotional feelings. Thus, NLP is an effective approach to the development of human and personal communication.

Research indicates that CBT can lead to significant improvements in anxiety symptoms and overall quality of life. For instance, studies have shown that CBT is effective not only in the short term but can also yield favorable long-term outcomes, particularly in youth with anxiety disorders. However, some evidence suggests that while CBT can produce immediate benefits, the sustainability of these effects may depend on various factors, including the individual's engagement with the therapy and the presence of ongoing stressors or life changes (21).

While CBT can instigate positive changes in thought patterns and coping mechanisms, some individuals may experience lingering anxiety or stress even after completing therapy. This can be attributed to the complexity of anxiety disorders, which may be influenced by biological, psychological, and environmental factors. Therefore, ongoing support, whether through booster sessions, self-help strategies, or supplementary therapies, may be beneficial for maintaining the gains achieved through CBT (22).

### **Limitations**

This study was conducted among high school students with stress and anxiety in Kerman city, so the generalization of its results should be done with caution.

Due to the inability to regulate the social and economic status of students, the effective results may be from these factors, which should be considered and controlled in future studies. Also, conducting cross-sectional studies is limited to 4 months, which should be considered for a longer period of time in order to obtain accurate results

### **Conclusion**

Students' levels of worry and tension are considerably reduced by both NLP and CBT, and both treatment techniques' results are not substantially different from one another. This approach provides the highest level of skills in the area of communication between people and practical methods to create transformation in thought and behavior. In light of NLP strategies, one can achieve personal goals faster and more effectively than before. Using the NLP strategies, mental resources (the neural part) will be used. Using the linguistic element will facilitate it to achieve goals, control the mental state, and arrange beliefs and values to achieve the desired results. This will be effective in controlling stress. Our findings showed that NLP therapy reduced stress better than CBT. Since no other studies were found that compared the effectiveness of these methods for reducing anxiety, we may theoretically explain this discrepancy by focusing more on how NLP teachings enhance interpersonal dynamics and systems, encourage self-expression and use it, and use self-hypnosis to control thoughts, feelings, and behavior that in turn enhance the dynamics of intrapersonal and interpersonal communication systems. Furthermore, NLP emphasizes that increased physical and emotional awareness of oneself and the environment

around one will result in even greater decreases in stress levels.

### ***Authors' contribution***

Hadi Anjomshoaa and Gholamreza Snagui Moharer developed the study concept and design. Mahmoud Shirazi and Hadi Anjomshoaa acquired the data. Hadi Anjomshoaa and Gholamreza Snagui Moharer analyzed and interpreted the data, and wrote the first draft of the manuscript. All authors contributed to the intellectual content, manuscript editing and read and approved the final manuscript.

### ***Informed consent***

Questionnaires were filled with the participants' satisfaction and written consent was obtained from the participants in this study.

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### ***Conflict of interest***

The authors declare that they have no conflict of interests.

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