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The Effectiveness of Cognitive-Behavioral Therapy on Resilience in High School Students

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ABSTRACT

Objective: The enhancement of resilience, a psychological characteristic, can be achieved through addressing the various challenges and issues faced during adolescence.

Methods: Consequently, this study aimed to investigate the impact of Cognitive Behavioral Therapy (CBT) on the resilience levels of high school students. Employing a semi-experimental design with a pre-test and post-test, as well as a control group, the research encompassed a 90-day follow-up period. From a pool of 10th and 11th grade students, 30 participants were randomly selected and assigned to either the experimental or control group, with each consisting of 15 individuals. The experimental group underwent 12 sessions of 90-minute cognitive-behavioral therapy. Throughout the study, the research participants completed Connor and Davidson's resilience questionnaire on three occasions: pre-test, post-test, and follow-up. The data obtained were subjected to analysis using repeated measures analysis of variance and analysis of covariance.

Results: Notably, the application of cognitive-behavioral therapy yielded a significant improvement in the resilience of high school students ($p<0.001$).

Conclusions: Consequently, this study demonstrates the potential of cognitive-behavioral therapy as an effective intervention for enhancing the resilience of high school students.

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Introduction

Resilience, which is a characteristic that exhibits variation from person to person, has the ability to either increase or decrease over time. This characteristic is formed through the intellectual and practical self-correction process that human beings undergo in the trial and error process of life. Furthermore, resilience is a result of the evolution of both the personality characteristics of the individual and the environment in which they exist. It is achieved through various means such as education, learning, practice, and experience (Searing et al., 2023).

Individuals who possess resilience act consciously and alertly when faced with obstacles. They possess self-awareness, meaning they have a deep understanding of their own feelings and emotions (Mehrabian et al.. 2022). Additionally, they possess the ability to identify the causes of these feelings and effectively manage their emotions in a healthy manner. Moreover, resilient individuals have empathy, which enables them to understand the feelings and behaviors of those around them. As a result, they are able to have a positive impact on not only themselves but also their environment and the people in their vicinity.

Individuals with high resiliency acknowledge the fact that obstacles are an inevitable part of life and understand that life is fraught with challenges. Furthermore, possessing certain personal characteristics such as self-confidence, social and family support, problem-solving abilities, the capacity to establish relationships with relatives and engage in open discussions about difficulties, the ability to seek help in a timely and appropriate manner, and the inclination to assist others are all qualities that can enable individuals to successfully navigate stressful situations and even derive valuable achievements from these complex and demanding circumstances (Özden & Atasoy, 2020).

Resilience is among these highly significant features that can exert a profound influence on the optimal level of mental well-being in individuals. Resilient individuals possess an internal locus of control, viewing themselves as responsible for their own circumstances and refraining from placing blame on external factors for any problems or failures they may encounter. They have embraced their own role in life's affairs and, along with this acceptance of responsibility, they firmly believe that each action they take will have a direct impact on their own lives (Fredrickson et al., 2005).

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Since cognitive-behavioral therapy (CBT) is an amalgamation of speech interventions and behavior change techniques, encompassing the tasks of assisting clients in the identification of their false cognitions, testing the very foundations of said cognitions, and rectifying distorted conceptualizations and dysfunctional beliefs (Beck et al., 1979), it follows that the indispensable cultivation of self-awareness can engender an augmentation of resilience.

The treatment in question is founded upon the overarching notion that the variable negative behaviors and thought patterns wield a substantial impact on personal emotions, thereby facilitating the recognition, analysis, and amendment of thoughts and behaviors, and ultimately assuaging feelings of anxiety and depression (Joyce et al., 2018). Functioning as a methodology predicated upon the generation of a response through mental rather than physical effects, cognitive-behavioral therapy is employed by psychologists and therapists alike to effectively instigate discernible transformations in individuals and alleviate emotional suffering, as well as contend with an array of behavioral, social, and intellectual issues (Boolaghi et al., 2016).

To be sure, cognitive-behavioral therapists are equipped to diagnose and address problems stemming from a person's irrational thinking, erroneous conclusions, aberrant thoughts, and incomplete learning; research suggests that this mode of treatment can ameliorate conditions such as anxiety, depression, anger, shame, low self-esteem, adjustment problems, sleep disturbance, and past pressures and traumas (Times, 2009). Given that adolescence represents an exceedingly vulnerable period in the life of a human being, numerous researchers maintain that initiatives designed to fortify their positive personality components have been undertaken with a view to fostering resilience in the face of adversity, thereby necessitating the implementation of diverse programs as part of my own education and training. While the teaching of social skills to students and the design of an emblem emerges as a pivotal measure within the purview of the Ministry of Education, it is worth noting that scientific instruction and treatments have been attested to as being more efficacious and superior in accordance with a wealth of research studies.

Considering the aforementioned contentions and the irrefutable fact that educational institutions represent one of the most crucial social and communicative establishments for children and adolescents, it becomes readily apparent that the employment of universally recognized scientific methodologies is poised to exert a momentous influence on this particular demographic, thereby conferring upon them the ability to acquire accurate cognitive frameworks and effectively manage

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their emotions, thus fostering resilience and curtailing propensities for engaging in risky behavior, thus attenuating social harm. Additionally, in light of extant research, it is worth mentioning that cognitive-behavioral therapy (CBT) has not been specifically utilized in the context of teenagers; as such, the current research endeavors to offer a response to the following query: does cognitive-behavioral therapy exert an impact on the resilience of high school students or does it not?

Materials and Methods

The current research method is semi-experimental with pre-test-post-test and follow-up with a control group. The statistical population of this research includes all male and female high school students in Qom city, 30 of the 10th and 11th grade high school students were selected by cluster random sampling in the conditions of their willingness and informed consent to participate in the research and not to use drugs for the treatment of mental illnesses. Exclusion criteria included absence of more than two sessions and unwillingness to continue cooperating with the research. Then the students were divided into two groups of 15 people, experimental and control. The ethical considerations considered in this research were confidentiality of information, consent from parents to participate in the research, and freedom to participate in the research. was analyzed. The tools used in this research included the following:

Connor and Davidson Resilience Scale: This questionnaire was prepared by Connor and Davidson (2003) by reviewing the research sources of 1979-1991 in the field of resilience. The psychometric properties of this scale have been investigated in six groups, the general population, primary care patients, psychiatric outpatients, patients with generalized anxiety disorder and two groups of post-traumatic stress patients. The producers of this scale believe that this questionnaire is well able to distinguish resilient from non-resilient people in clinical and non-clinical groups and can be used in research and clinical situations. Connor and Davidson resilience questionnaire has 25 items that are scored on a Likert scale between zero (completely false) and five (always true). This scale was standardized in Iran by Khoshouei (2009). He used a maximum likelihood method with an oblique solution resulted in four factors (achievement motivation, self-confidence, tenacity, and adaptability), and all estimates of reliability (alpha and test-retest correlations) coefficients were sufficiently high to provide confidence in the scores from these four factors of resilience. In research conducted by Samani et al. (2007) among students, they reported its

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reliability as 0.93 and the validity (using factor analysis and convergent and divergent validity) was verified by the test makers in different normal and at-risk groups. To determine the validity of this scale, first the correlation of each statement with the total score of the category was calculated and then the factor analysis method was used. Calculating the correlation of each score with the total score, except for statement 3, showed coefficients between 0.41 and 0.64. Then, the scale expressions were subjected to factor analysis using the principal components method. Before extracting the factors based on the correlation matrix of expressions, two KMO indexes and Bartlett's sphericity test were calculated. The KMO value was equal to 0.87 and the chi-square value in Bartlett's test was equal to 5556.28, both of which indicated the sufficiency of the evidence for factor analysis (Rahimian Boogar & Asgharnejad, 2008).

Cognitive Behavioral Therapy: Cognitive-behavioral therapy is a combination of theories and techniques of behavioral therapy and cognitive therapy. Both behavioral and cognitive approaches are partially derived from the experimental tradition and its emphasis is on increasing cognitive skills and reducing maladaptive cognitive activities. Behavioral tasks are also used to change behavior and these methods are used for patients according to their progress in each session (Wenzel, 2017). The origin of the cognitive-behavioral therapy method goes back to the cognitive therapy method of Beck and Rush (1979), which was mainly invented for the treatment of depression. Based on Beck's cognitive theory, depressed people engage in wrong and illogical thoughts and this is the main cause of their problems. Therefore, the most important step in Beck's treatment method is to help the client to recognize the wrong thoughts and incompatible ideas that cause his problem and includes 12 sessions of 60 minutes. Between the sessions, exercises are considered for the therapist. Cognitive-behavioral therapy is based on the general idea that variable negative behaviors and thought patterns have a great impact on personal emotions. It helps to recognize the analysis and change of thoughts and behaviors, that is, it helps to relieve feelings of anxiety and depression; This therapy is a method based on creating a response through mental rather than physical effects, which is used by psychologists and therapists to help promote definite changes in people and help relieve emotional suffering, as well as address a wide range of behavioral, social and intellectual issues. Cognitive behavioral therapists diagnose and treat problems caused by a person's irrational thinking, false inferences, abnormal thoughts, and incomplete learning. This type of therapy can be conducted by individuals, families, and groups.

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Issues such as anxiety, depression, anger, shame, low self-esteem, adjustment problems, sleep disturbances, and past pressures and traumas are mentioned (Times, 2009). which is based on 10 truths: 1- Change in your thoughts and actions (Change) 2- Continuous practice of what you have learned (Homework) 3- Do what you learned, not just talk about it (Action) 4- Try Identify your problem quickly (Need) 5- Move persistently towards your goal (Goals) 6- Show a continuous effort to realize this treatment (Evidence) 7- See issues from different angles 8- Be confident in yourself (I can do it) 9- Test your beliefs (Experience) and 10- Take note of your progress (Write it down) (Golchin, 2016).

Results

Table 1 shows the mean and standard deviation of the research variables. The average of the students who were in the experimental group has changed from the pre-test stage to the follow-up stage. Analysis of variance with repeated measurements was used to investigate these changes. Before running the test, its assumptions were checked. In table 2, the assumption of normality of the distribution of test scores is reported and it shows that the assumption of normality has been met, and table 3 shows the results of Levene test, which shows the assumption of equality of variances, and as seen in the table, the value The obtained F for Levene test in the resilience variable in the pre-test, post-test and follow-up stages in the experimental and control groups is insignificant. This non-significance means that the assumption of homogeneity of the variance of the scores in the mentioned components has been met, and also the results of Mauchly's test of sphericity, Table 4 show that the assumption of sphericity, which is one of the assumptions of variance analysis with repeated measurements, has been met. The data in Table 5 shows that the participants of the experimental group obtained better scores in the Connor and Davidson resilience questionnaire in the post-test and follow-up phase than the control group.

Table 1. Mean and standard deviation of resilience in the experimental and the control groups in pre-test, post-test and follow-up

Group	Pretest		Posttest		Follow up	
	Mean	SD	Mean	SD	Mean	SD
CBT	59.86	16.16	77.33	13.18	76.06	13.33
Control	62.80	15.17	63.26	14.63	62.60	14.28

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Table 2. The results of the Kolmogorov-Smirnov test and Shapiro–Wilk test regarding the assumption of normality

Phase	Group	K-S			S-W		
		Statistic	DF	p	Statistic	DF	P
Pretest	CBT	0.13	15	0.20	0.95	15	0.42
	Control	0.12	15	0.20	0.95	15	0.42
Posttest	CBT	0.15	15	0.20	0.93	15	0.26
	Control	0.13	15	0.20	0.92	15	0.16
Follow up	CBT	0.14	15	0.20	0.94	15	0.32
	Control	0.11	15	0.20	0.94	15	0.28

Table 3. The results of Levene's test regarding the assumption of equal variances of the scores

Variable	Phase	F	DF1	DF2	P
Resilience	Pretest	0.09	2	42	0.91
	Posttest	0.12	2	42	0.88
	Follow up	0.15	2	42	0.85

Table 4. Mauchly's test result of sphericity of the variables

Mauchly's test	X^2	DF	p
0.97	0.79	2	0.67

Table 5. The results of analysis of variance with repeated measures

Effect	SS	DF	MS	F	P	Effect size	Power
Time	1453.35	2	726.67	10.14	0.001	0.27	0.93
Group membership	1512.90	1	1512.90	11.40	0.001	0.29	0.94
Time * Group	1395.80	2	697.90	9.77	0.002	0.56	0.92
Error	9826.84	56	175.48				

The results of the analysis of variance with repeated measures in Table 5 show that based on the calculated F coefficient, the time factor or the assessment stage had a significant effect on the resilience scores of the 10th and 11th grade students (P<0.001). The effect size shows that the time factor explains 27% of the variance in the variances of resilience scores. The statistical power size of 93% indicates high statistical accuracy as well as the adequacy of the sample size to evaluate this research question.

In addition, based on the calculated F coefficient, the effect of group membership factor (cognitive behavioral therapy) on resilience scores of 10th and 11th grade students is significant (p<0.001). Therefore, it is concluded that the group membership factor or the type of treatment received (cognitive behavioral therapy) had a significant impact on the resilience of 10th and 11th grade students. The effect size shows that group membership (cognitive behavioral therapy) explains

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29% of the difference in resilience scores. The statistical power of 94% indicates high statistical accuracy and sufficient sample size to evaluate the effect of the type of treatment on the resilience of 10th and 11th grade students.

In addition, these results indicate that the interaction effect of the type of treatment (cognitive behavioral therapy) and time factor on resilience scores of 10th and 11th grade students is significant ($p<0.001$). Therefore, it is concluded that the type of treatment received (cognitive behavioral therapy) in different stages of evaluation had a significant impact on the resilience of 10th and 11th grade students. The effect size shows that the interaction effect of group membership (cognitive behavioral therapy) and time explains 26% of the difference in resilience scores. The statistical power of 92% indicates high statistical accuracy and sufficient sample size to evaluate the effect of group interaction and time on the resilience of 10th and 11th grade students. In general, it can be said that cognitive behavioral therapy has had an impact on the resilience of 10th and 11th grade students in the different stages of evaluation.

Discussion

The findings of the current research show that cognitive-behavioral therapy has a positive and significant effect on the resilience of high school students and this training increases resilience. These findings are consistent with the researches of Charmchi et al. (2016), Nuryanto et al. (2022), Ma et al. (2020) and OwjiNejad et al. (2022).

In the explanation of these findings, one can assert that cognitive-behavioral therapy has exhibited efficacy in enhancing the resilience of adolescents in high school. It has been posited that the deficiency in accurate recognition and erroneous emotions and behaviors precipitate a decline in resilience and an escalation in aggressive conduct among teenagers, thus engendering a pernicious cycle of behavior. Cognitive-behavioral therapy has been employed to facilitate alterations in cognition, emotions, and consequently, rectify the conduct of high school students, thereby augmenting resilience and ameliorating the predicaments faced by teenagers. Hence, it can be inferred that the instruction of behaviors and accurate recognition of emotions and mental structures have fortified the self-assurance, maturity, and self-worth of high school students.

In relation to the susceptibility of high school students, certain factors can be identified, such as diminished self-assurance, flawed recognition, emotional enactment, and a dearth of audacious

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skills, which engenders a decrease in resilience and an elevation in behavioral and emotional blunders. The utilization of cognitive-behavioral intervention to address these concerns is contemplated. The fundamental tenet of cognitive-behavioral therapy is that enhancing cognition and conduct can heighten resilience and ameliorate behaviors during this developmental phase, namely adolescence.

One of the constraints of the current investigation is that the intervention was limited to students in the 10th and 11th grades, and solely focused on the city of Qom. As a consequence, it is recommended to implement this intervention targeting the resilience variable among teenagers of varying educational levels and in different cities to enhance the generalizability of the findings. Furthermore, in the present study, the generalizability of the results to other populations that diverge in terms of crucial factors (cultural, social, and lower socioeconomic status) has not been examined. Consequently, it is proposed to offer a greater number of sessions, more practical training sessions, and employ simpler language for this particular cohort.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by ethics committee of Islamic Azad University. The patients/participants provided their written informed consent to participate in this study.

Author contributions

All authors contributed to the study conception and design, material preparation, data collection and analysis and contributed to the article and approved the submitted version.

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