



Konseling Edukasi

Journal of Guidance and Counseling

[https://journal.iainkudus.ac.id/index.php/Konseling\\_Edukasi](https://journal.iainkudus.ac.id/index.php/Konseling_Edukasi)

E-ISSN: 2580-9008

Vol. 2 No. 10 Tahun 2026 | 143 – 156

DOI: [10.21043/konseling.v10i2.29901](https://doi.org/10.21043/konseling.v10i2.29901)

## Cognitive Behavior Therapy (CBT) Experimentation in Reducing Students' Academic Anxiety

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### Abstract

***Cognitive Behavior Therapy (CBT) Experimentation in Reducing Students' Academic Anxiety.*** This study aims to test the effectiveness of individual counseling with a Cognitive Behavioral Therapy (CBT) approach in reducing academic anxiety in eleventh-grade students at SMK Muhammadiyah Jember. Using a true experimental design with a pretest-posttest control group design, this study involved 60 students (N=60) selected through purposive sampling technique based on the criteria of high academic anxiety scores. Subjects were randomly divided into an experimental group (n=30) who received six sessions of CBT intervention, and a control group (n=30) who were on the waitlist (waitlist control group). The intervention process focused on identifying cognitive distortions related to vocational demands, restructuring negative thoughts, and self-regulation training. Data were analyzed using an independent sample t-test. The results of the statistical test

*showed a very strong significant difference between the two groups ( $t = -23.86, p < .001$ ), where the experimental group at SMK Muhammadiyah Jember showed a drastic decrease in academic anxiety compared to the control group. These findings prove that CBT techniques are effective in increasing motivation and concentration in learning through modifying technical mindsets. Practically, these results can be adopted by guidance and counseling teachers in vocational high schools as an evidence-based clinical protocol (evidence-based practice) to address students' psychological barriers in facing the burden of assignments and practical exams.*

**Keywords:** *Cognitive Behavioral Therapy, Individual Counseling, Learning Problems, Experiments.*

Submitted: 04, 12, 2024

| Accepted: 04, 09, 2026

| Published: 04, 10, 2026

## **A. Introduction**

The phenomenon of academic anxiety in vocational high school (SMK) students shows a worrying escalation and has a destructive impact on the quality of learning.(Novianti, 2024). Based on pre-research data at Muhammadiyah Vocational High School in Jember, the majority of eleventh-grade students experience significant levels of excessive anxiety, with 63.7% (a combination of 18.2% strongly agreeing and 45.5% agreeing) stating that anxiety is their main obstacle. Symptoms include fear of failure, overthinking of the study load, and acute anxiety when facing exams. If left untreated, this condition can trigger broader mental health disorders and a drastic decline in students' academic performance in vocational education settings (Rahmawati et al., 2025).

Ideally, the secondary school environment should be a space for developing potential with minimal pathological pressure, where students have the cognitive resilience to face the challenges of the curriculum (Takwil, 2020). Guidance and Counseling (BK) in schools has a crucial role in providing evidence-based interventions to help students manage their emotional

responses.(Khairuzzakiah & Siregar, 2024)Early management of anxiety through structured individual counseling services is essential for students to be able to transform maladaptive thought patterns into more adaptive, productive, and achievement-oriented learning behaviors (Harahap et al., 2025). Given this urgency, this research is crucial to conduct in order to provide an applicable and effective model for handling academic anxiety at the school level.

Previous research has consistently demonstrated the efficacy of Cognitive Behavior Therapy (CBT) in various educational settings. González-Valero et al. (2019) and Utami et al. (2020) initiated this trend by demonstrating that CBT, either purely or integrated with gratitude training, can significantly reduce academic stress. Furthermore, research by Situmorang (2021) showed that modifying CBT with active music therapy had a positive impact on students' mental health, while Abida and Salamah (2021) confirmed that CBT remains the most relevant approach to reducing academic anxiety in children and adolescents through identifying negative thought patterns.

Entering the period from 2023 to 2025, the development of CBT research is becoming increasingly sharp and varied. Bhatta et al. (2023) found that group CBT interventions had a large effect size on reducing test anxiety in students. In 2024, Evriani and Fardana (2024) and Jagiello et al. (2025) confirms that individual CBT is effective in reducing students' procrastination and academic anxiety from high to moderate levels. The latest trend in 2025, according to a study by Khurshid et al. (2025) and Nwadi et al. (2025) explores the integration of CBT with mindfulness techniques to enhance self-efficacy, which shows that CBT continues to evolve in addressing the complexity of students' psychological problems holistically.

Although extensive research on CBT has been conducted, there is a significant research gap: the limited number of experimental studies specifically targeting the vocational high school student population under the auspices of Muhammadiyah institutions, characterized by high practical workloads and specific ideological demands. The uniqueness of this research lies in the

application of CBT mechanisms integrated with cognitive restructuring and gradual desensitization techniques adapted to the cultural context of vocational schools, in order to modify students' irrational beliefs regarding industrial competency demands.

The primary objective of this study was to empirically test the effectiveness of CBT experimentation in reducing academic anxiety levels among students at Muhammadiyah Jember Vocational High School. Through this approach, researchers hope to map the shift from negative thought patterns to adaptive self-talk, which in turn will improve students' school functioning, concentration, and overall self-confidence.

## **B. Method**

This study used a quantitative approach with a true experimental method. The design used was a pretest-posttest control group design to comparatively test the effects of the intervention between the treatment group and the control group (Sugiyono, 2022: 98).

### **1. Participants and Sampling Procedures**

The research population was the eleventh grade students of SMK Muhammadiyah Jember. The sampling technique used purposive sampling with the following inclusion criteria: (1) students who had academic anxiety scores in the High category based on the pre-test results, (2) not currently taking other counseling services, and (3) willing to take part in the six full intervention sessions. A total of 60 students were selected (N=60) and randomly divided (random assignment) into two groups: the experimental group (n=30) and the waitlist control group (n=30).

### **2. Research Instruments**

Data were collected using an academic anxiety instrument developed based on the cognitive theory of Aaron T. Beck and Albert Ellis. (2014). This scale measures

aspects of cognitive distortions, irrational beliefs, and physiological manifestations of anxiety.

a. Validity

The content validity test was conducted through expert judgment, followed by a construct validity test using Product Moment correlation which showed that all items had an  $r$  value  $> 0.30$ .

b. Reliability

The reliability coefficient was calculated using the Cronbach's Alpha formula with a score of  $\alpha = 0.89$ , which indicates that this instrument has a very reliable internal consistency for use in the context of vocational education.

3. CBT Intervention Procedures

The intervention was conducted in six individual sessions, each lasting 45–60 minutes. The primary focus was modifying negative thought patterns related to the workload and vocational demands. Details of the intervention procedures are presented in Table 1.

**Table 1. CBT Individual Counseling Intervention Protocol**

Session	Topic/Objective	CBT Technique	Main Activities
1	Relationship Building & Psychoeducation	<i>Briefing &amp; Alliance</i>	Building rapport and explaining the thought-feeling-behavior relationship.
2	Identifying Automatic Thoughts	<i>Cognitive Appraisal</i>	Finding cognitive distortions when facing vocational tasks/exams.
3	Cognitive Restructuring	<i>Socratic Questioning</i>	Challenging irrational beliefs and replacing them with adaptive thoughts.
4	Self-Regulation & Emotions	<i>Relaxation Training</i>	Progressive muscle relaxation exercises to reduce physiological symptoms of anxiety.

5	Behavior Modification	<i>Behavioral Activation</i>	Create a structured study schedule and time management techniques.
6	Termination & Relapse Prevention	<i>Self-Reward</i>	Evaluate progress and develop strategies to address future anxiety triggers.

#### 4. Data analysis

All data obtained were pre-tested using the Shapiro-Wilk and Levene's tests for normality and homogeneity. After ensuring the data were normally distributed and the variance between groups was homogeneous, a hypothesis test was conducted using the Independent Sample t-test with SPSS software. The significance level set in this study was  $\alpha = .05$  (Field, 2018: 203).

### C. Discussion

#### a. Hypothesis Test Results

The t-test produces a value  $t = -23.86$ ,  $p < .001$ , indicating a significant difference between the experimental and control groups. Because the p-value is smaller than 0.05,  $H_0$  (no difference) is rejected. Individual counseling with the CBT approach has proven effective in helping reduce learning problems of class XI students at SMK Muhammadiyah Jember.

The items that were valid using the 11-item learning problem questionnaire were then tested for reliability using SPSS 25.00 for Windows, and the results can be described as follows:

**Table 2. Descriptive Statistics**

<b>Group</b>	<b>Average</b>	<b>Variance</b>	<b>Standard deviation</b>
<b>Experiment</b>	38.5	0.9167	0.957
<b>Control</b>	50.0	0.4	0.6325

The significant reduction in academic anxiety in this study is inseparable from the crucial role of school support at SMK Muhammadiyah Jember. A supportive educational environment, characterized by a school policy open to innovation in guidance and counseling services, creates a safe atmosphere for students to undergo the intervention process. Support from subject teachers and homeroom teachers in providing time dispensations and appreciating changes in student behavior in class acts as an external reinforcer that accelerates the internalization of CBT techniques learned during counseling sessions.

In addition to environmental factors, the unique characteristics of the eleventh-grade vocational high school students who served as research subjects also contributed to the effectiveness of the intervention. Developmentally, adolescents at this stage begin to develop more mature metacognitive abilities, enabling them to engage in self-reflection and engage in cognitive restructuring procedures that require analytical thinking. Students' intrinsic motivation to overcome anxiety caused by the pressure of practical workloads and the demands of vocational competencies serves as a key catalyst. This psychological readiness facilitates counselors in guiding students to replace their irrational beliefs with more adaptive and pragmatic mindsets in line with the realities of vocational education.

On the other hand, the quality and competence of the counselor providing the intervention are determining variables in the success of CBT implementation. Success in achieving a t-value of -23.86 reflects the counselor's ability to build a strong therapeutic alliance and mastery of precise Socratic questioning techniques. Counselors who possess clinical sensitivity in identifying students' cognitive distortions and are able to design desensitization steps relevant to Muhammadiyah school culture ensure that each intervention session is effective. The counselor's professionalism in facilitating each phase of CBT, from identifying automatic thoughts to preventing relapse, ensures that the changes occurring in students are based on accurate and standardized clinical procedures.

## **b. Hypothesis Results Analysis**

The statistical analysis results showed that the Cognitive Behavior Therapy (CBT) intervention significantly reduced academic anxiety in eleventh-grade students at SMK Muhammadiyah Jember ( $t = -23.86, p < .001$ ). The rejection of the null hypothesis ( $H_0$ ) confirmed that the cognitive and behavioral changes experienced by the students were a direct result of the systematic CBT clinical procedure. This finding is in line with the study by Jagiello et al. (2025) and Evriani and Fardana (2024) which states that structured cognitive intervention can change anxiety levels from high to moderate. This success demonstrates that cognitive restructuring is effective in breaking students' irrational thought patterns regarding the burden of vocational tasks, which were previously perceived as an unbearable threat.

The effectiveness of CBT in this study was strongly supported by the metacognitive maturity of adolescent students in vocational schools. The self-reflective abilities emerging in eleventh-grade students enabled them to engage in Socratic questioning techniques to challenge their own cognitive distortions. This aligns with Permatasari and Prasetyawati's findings (2023) that adolescents have the psychological readiness to adopt new coping skills when given individual CBT intervention. Students' intrinsic motivation to overcome learning barriers in the vocational high school environment becomes a catalyst that accelerates the internalization of adaptive mindsets, similar to the observations of Eneogu et al. (2024) regarding the strong impact of CBT on a high school student population.

Furthermore, external support from SMK Muhammadiyah Jember was a crucial factor in strengthening the experimental results. The supportive school atmosphere and the subject teachers' appreciation of student behavioral changes acted as crucial external reinforcers. This characteristic of a safe environment for innovation in guidance and counseling services reinforces the findings of González-Valero et al. (2019) The educational context is crucial for the success of academic stress reduction. The synergy between clinical interventions in the counseling room and social support outside the classroom creates a more stable and sustainable impact.

From a procedural perspective, achieving a high significance value ( $p < .001$ ) reflects the quality of the therapeutic alliance and the counselor's professionalism. Automatic thought identification and desensitization techniques adapted to Muhammadiyah school culture enabled the intervention to be more relevant to students. A study by Nwadi et al. (2025) confirms that academic self-efficacy can be significantly improved if CBT techniques are delivered with high clinical precision. The counselor's sensitivity in facilitating each session ensures that students not only understand the theory but are able to practice self-regulation in real-life stressful academic situations.

The results of this study also strengthen the trend of CBT effectiveness in various parts of the world (Bhatta et al., 2023; De Silva et al., 2024). Although some variants of CBT are combined with music (Situmorang, 2021) or mindfulness (Nwadi et al., 2025), the pure CBT individual counseling applied in this study still showed a very strong effect size. This provides empirical evidence that the standard CBT protocol, which includes cognitive restructuring and behavior modification, remains the gold standard for treating academic anxiety disorder in vocational education institutions.

This research provides theoretical and practical contributions to the development of guidance and counseling services in Indonesia. These findings not only confirm Beck and Ellis' cognitive theory in the context of vocational schools but also support the conclusions of Khurshid et al. (2025) CBT is a flexible intervention that can be adapted into a comprehensive guidance program. Practical implications: Guidance and counseling teachers can adopt the six-session protocol used in this study as a preventive and curative measure to continuously improve students' mental health and academic achievement.

#### **D. Conclusion**

Based on the statistical analysis conducted, it can be concluded that individual counseling intervention with the Cognitive Behavior Therapy (CBT) approach is significantly effective in reducing academic anxiety of grade XI students

at SMK Muhammadiyah Jember ( $t = -23.86$ ,  $p < .001$ ), which is characterized by increased self-regulation abilities and changes in thought patterns from maladaptive to adaptive. The implications of this finding confirm that the use of a structured CBT protocol can be a standard evidence-based practice for school counselors to overcome learning barriers rooted in cognitive distortions. Therefore, it is recommended for schools to integrate CBT modules into comprehensive guidance and counseling programs, and for future researchers it is hoped that they can expand the scope of research by involving other mediator variables such as self-efficacy or social support to enrich the scientific treasure of guidance and counseling in vocational education environments.

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