

The Effectiveness of Cognitive Behavioral Therapy in Reducing Depression Levels in Adolescents from the Perspective of Big Five Personality Traits

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ABSTRACT

Adolescence experience various changes characterized by significant transformations in physical, cognitive, emotional, and psychological aspects, which can influence depression. Depression is a common mental disorder among adolescents and adults, marked by feelings of sadness, worthlessness, guilt, and somatic symptoms like fatigue, eating disorders, and sleep disturbances. Personality traits play a crucial role in shaping how individuals think and behave, influencing their susceptibility to depression. This study aims to evaluate the efficacy of cognitive behavioral therapy (CBT) in alleviating depression among adolescents, considering the influence of the big five personality traits. The population for this study consists of 170 students from SMPN "X." The sampling method used is purposive sampling, with a determined sample size of 114 students, aged 12-18 years. This study employed an experimental method with a pre-experimental design, using a one-group pre-test and post-test approach. The instruments used were the Depression Scale and BFI-II, with validity and reliability scores of 0.924 and 0.914, respectively. Data analysis was conducted using the paired sample t-test and kruskal wallis test. the paired sample t-test results showed an asymp. sig. (2-tailed) value < 0.05 , or $0.000 < 0.05$, indicating a difference between pretest and posttest results after the CBT intervention. This demonstrates that CBT is effective in reducing depression levels in adolescents. the kruskal wallis test results showed an asymp. sig. (2-tailed) value > 0.05 , or $0.104 > 0.05$, indicating no significant differences in depression level reduction among adolescents with the personality traits of neuroticism, agreeableness, openness, and conscientiousness. Based on the findings, it is recommended that schools implement CBT-based interventions as part of mental health programs to help reduce depression in adolescents. Additionally, future studies should examine whether personalized CBT approaches tailored to specific personality traits could enhance the effectiveness of therapy.

Keywords: Adolescents, Depression, CBT, Personality

INTRODUCTION

Adolescence is a period of transition marked by significant changes in various aspects such as physical, cognitive, emotional, psychological, interpersonal relationships, and social interests (Yusuf, 2016). According to UUD No. 40 of 2009, adolescents are defined as Indonesian citizens aged 16–30. These changes present developmental challenges distinct from those in childhood, often triggering anxiety and restlessness that can lead to depression (Bluth et al., 2016). World Health Organization (2016) highlights mental health concerns such as depression commonly arise in late childhood and early adolescence, with global prevalence rates of major depression among adolescents ranging from 14% to 20%. Presently, about 450 million individuals worldwide are affected by mental and behavioral disorders, with one in four people experiencing one or more mental disorders during their lifetime (Ayuningtyas, 2018).

The prevalence of depression among adolescents is 8%, with 28% potentially experiencing depression. Female adolescents experience higher rates of depression compared to males, with a ratio of 7% among females and 1% among males (Dianovinina, 2018). Similarly, among those at risk of depression, 24% are female adolescents, compared to 4% of male adolescents. Data from KPPPA (2020) states that more than 3,200 students (13%) from elementary to high school in 34 provinces in Indonesia exhibit symptoms of mild to severe depression. Most of these symptoms, 93%, are experienced by children aged 14–18 years, while the remaining 7% are experienced

by children aged 10–13 years (Azizah, 2022).

Bernas (2019) states that depression is a mood disorder in which an individual is overwhelmed by feelings of sadness, emptiness, and hopelessness or loses interest in various activities for two weeks or more. Depression in adolescents can manifest through various behaviors. Symptoms include prolonged feelings of sadness, choosing to withdraw, lack of concentration, decreased appetite or overeating, eating disturbances, sleep disturbances, and frequent tiredness. Depression is characterized by irritability, feeling overwhelmed, fear, lack of motivation, sadness, and conflicts with friends or family (Desi & Rahmawati, 2020). In severe cases, depression can even lead to suicide (Shah et al., 2020). Given its profound impact, identifying risk factors for adolescent depression is crucial. This is consistent with Faizah et al. (2021), who state that depression is a condition where an individual experiences persistent feelings of unhappiness and dissatisfaction, leading to extreme sadness that can ultimately affect and disrupt daily functioning.

Lee, J. H. (2018) identifies several factors contributing to depression in adolescents. These factors include academic stress and pressure from school, interpersonal issues such as conflicts with peers or family, inability to manage emotions effectively, and the influence of an unhealthy or unsupportive social environment. Previous studies (Vantemar et al., 2019; Bhatia, 2017; Hankin et al., 2015) have identified several risk factors associated with increased adolescent depression. These factors include mood swings, peer competition dynamics leading to bullying or rejection, academic and social pressures, involvement in risky behaviors, and heightened stress due to life changes and uncertainties.

Treating depression in adolescents can be approached through various therapeutic methods, including CBT. Previous research indicates that CBT effectively reduces depression levels by addressing cognitive distortions and promoting a more positive outlook on oneself and the future (Oud, 2019). CBT helps individuals transform negative moods and behaviors into more positive ones. The effectiveness of cognitive therapy lies in its ability to modify moods and behaviors, enhance self-esteem, and improve coping mechanisms for stressful situations, thereby reducing anxiety and even physical complaints.

Depression is closely related to how someone copes with their problems. Personality significantly contributes to the development of depression. Geshica and Musabiq (2017) found that individuals with high neuroticism levels tend to experience more severe psychological distress and deeper depression. In contrast, adolescents with high extraversion scores seem to be more resilient to psychological stress, which lowers their risk of depression. According to Nouri et al. (2019), high scores in neuroticism are positively correlated with a greater susceptibility to depression. In contrast, traits like extraversion and conscientiousness have been found to have negative correlations with depression, indicating that individuals with higher levels of extraversion and conscientiousness are less prone to experiencing depressive symptoms. The connection between personality traits and mental health has long been a central theme in psychological research. Within the Big Five personality traits, neuroticism has been consistently associated with increased psychological distress and a heightened risk of depression. Additionally, research by Brown & Barlow (2019) explain that there is substantial comorbidity between depressive disorders and other forms of psychopathology. Certain personality traits, such as neuroticism, are associated with various psychiatric conditions. Thus, personality can help explain patterns of comorbidity and suggest a more etiologically relevant classification system. Nikčević et al. (2021) further corroborate these findings, demonstrating that neuroticism is positively associated with psychological distress, while extraversion, agreeableness, conscientiousness, and openness exhibit negative associations with psychological distress.

These insights underscore the critical need for understanding how various personality traits impact mental health, which can inform more targeted interventions and therapeutic approaches. This study aims to evaluate the effectiveness of CBT in reducing depression levels in adolescents through the lens of the Big Five personality traits. Understanding the connection between personality and depression allows for the development of more effective interventions, which can help adolescents identify triggers, manage emotions, and employ suitable coping strategies to prevent and address depression.

RESEARCH METHODOLOGY

This study employs a pre-experimental research design using a one-group pre-test and post-test approach. In this

type of design, a single group of participants is measured both before and after the intervention, with any differences in the measurements attributed to the effect of the treatment (Latipun, 2015). The population for this study comprises 170 students from SMPN “X”. The sampling method used is purposive sampling, and the sample size is determined to be 114 students, according to the Krejci table. The criteria for selecting the sample include:

1. Adolescents aged 12-18 years.
2. Male or female.
3. Experiencing depression.
4. Exhibiting a prominent score in one of the Big Five personality traits.
5. Willing to participate with informed consent.
6. Capable of effective communication and able to read and write.

The measurement instruments used in this study included a depression scale based on the aspects of depression proposed by Alford and Beck (2009). The BFI-II was adapted from the Indonesian version of the Big Five Inventory (BFI), as developed by Ahya & Saputra (2021). The validity and reliability tests for the depression scale, conducted over three rounds of analysis, yielded a Cronbach's Alpha reliability coefficient of 0.924, with 52 valid items. Additionally, the reliability test for the Big Five Personality Traits scale, after two rounds of analysis, resulted in a Cronbach's Alpha reliability coefficient of 0.914, with 49 valid items.

The results indicate that 5 students have severe depression scores, 35 have moderate depression scores, and 74 have mild depression scores. Consequently, 40 students meet the criteria for inclusion in the study's depression category. Among these 40 subjects with moderate to severe depression, 19 students exhibit a prominent agreeableness personality type, 5 exhibit neuroticism, 5 exhibit conscientiousness, and 3 exhibit openness. No subjects with moderate to severe depression exhibit a prominent extraversion personality type. Additionally, 8 students have balanced personality scores and are not included as study subjects.

Participant selection is contingent upon identifying individuals whose personality types align with the criteria for depression. Nevertheless, only 8 out of the 32 eligible subjects consented to take part in the research. The other students were unable to participate due to their involvement in school activities such as OSIS, scouting competitions, or responsibilities as class representatives during interclass competitions, which coincided with the study period following semester exams.

The independent variables in this study are CBT (X1) and the Big Five Personality Traits (X2), while the dependent variable is adolescent depression (Y). The instruments used include a pre-test (administered at the start of the study) and a post-test (administered after the intervention). The scales employed consist of favorable and unfavorable items. Both the depression and social support scales use a Likert scale format, where subjects indicate their agreement or disagreement with the statements provided (Azwar, 2021). Data analysis techniques in this research primarily involve hypothesis testing to evaluate the effectiveness of CBT in reducing depression levels and to explore differences in depression across various Big Five personality traits among adolescents.

RESULT

A. Hypothesis test

Table I. Descriptive Analysis Result

Aspect	Total	Mean
Pretest	8	128,38
Post test	8	71,50

Source: Processed Data by Researchers

Based on the descriptive analysis results, the average depression score for the study subjects before the intervention was 12.38, while the average score after the intervention was 71.50. This indicates a reduction in depression levels among the subjects following the Cognitive Behavioral Therapy intervention.

Table II. Paired Sample T test

Aspect	Total	Mean	t	Sig.(2-tailed)
Depression	8	56.875	11.563	0.000

Source: Processed Data by Researchers

Based on the results of the statistical tests, a t-value of 11.563 was obtained, with a mean of 56.875 and a significance level of 0.000, which is less than 0.05 ($p < 0.05$). This indicates that there is a significant difference between the pre-test and post-test results. After confirming the significant difference between the pre-test and post-test outcomes, the next step was to analyze the categories of differences between the pre-test and post-test scores. This categorization aims to assess the depression scores before and after the intervention. The categories of differences in pre-test and post-test scores for the subjects are presented in the following table:

Table III. Category of Difference Between Pre-test and Post-test Results

Subject	P-type	Pre	Post	Difference	Category
LN	<i>neuroticism</i>	136	85	51	Decrease
TY	<i>neuroticism</i>	128	86	42	Decrease
NS	<i>conscientiousness</i>	119	65	54	Decrease
AN	<i>conscientiousness</i>	110	60	44	Decrease
LL	<i>agreeableness</i>	143	74	69	Decrease
KY	<i>agreeableness</i>	116	72	42	Decrease
RH	<i>Openness</i>	114	62	52	Decrease
RR	<i>Openness</i>	101	68	33	Decrease

*Depression category: low: < 87 , medium: 87-121, heavy: > 121

Source: Processed Data by Researchers

Based on the result, it can be concluded that all subjects experienced a decrease in depression scores. Additionally, a Kruskal-Wallis Test was conducted to assess whether there were differences in outcomes after the intervention among subjects with neuroticism, conscientiousness, agreeableness, and openness personality traits, resulting in the following findings:

Table IV. Kruskal-Wallis Test Rank Results

Test	Personality	N	Mean Rank
Depression after receiving CBT	<i>neuroticism</i>	2	7.50

	<i>conscientiousness</i>	2	2.00
	<i>agreeableness</i>	2	5.50
	<i>openness</i>	2	3.00

Source: Processed Data by Researchers

Table V. Statistic Result *Kruskal-Wallis Test*

Post-test Result	
Kruskal Wallis H	6.167
df	3
Asymp.Sig.	0.104

Source: Processed Data by Researchers

Based on the results of the kruskal-wallis test, a kruskal-wallis value of 6.167 was obtained, with a p-value of 0.104 ($p > 0.05$). This indicates that there are no significant differences in depression levels when viewed through the lens of the Big Five personality traits. However, examining the Mean Ranks in the depression data after CBT, subjects with neuroticism had a mean of 7.50, subjects with agreeableness had a mean of 5.50, subjects with openness had a mean of 3.00, and subjects with conscientiousness had a mean of 2.00. This suggests that individuals with neuroticism experienced a faster reduction in depression levels following CBT compared to those with openness, agreeableness, and conscientiousness.

B. Effectiveness of Cognitive Behavioral Therapy (CBT) in Reducing Depression Levels in Adolescents

The findings of this study indicate that Cognitive Behavior Therapy (CBT) is significantly effective in reducing depression levels among adolescents. CBT is a therapeutic approach that focuses on modifying dysfunctional thinking (cognitive) and behavior patterns (behavioral). This method has been shown to be particularly beneficial for individuals suffering from depression, which is often exacerbated by negative thought patterns leading to increased stress, excessive fear, and anxiety (Rizky, Netrawati, Karleni, 2023).

The results from the paired sample t-test analysis revealed a statistically significant reduction in depression scores post-intervention, suggesting that CBT addresses the core cognitive and behavioral components contributing to depression. The substantial decrease in mean depression scores from 128.38 before the intervention to 71.50 after the intervention underscores the efficacy of CBT in mitigating depressive symptoms.

These findings are consistent with existing literature that highlights the effectiveness of CBT in treating depression (Putranto, 2016). The reduction in depressive symptoms can be attributed to the restructuring of negative thought patterns and the development of healthier coping mechanisms facilitated by CBT. Moreover, the focus on actionable behavioral changes complements cognitive restructuring, providing a comprehensive approach to managing depression.

The implications of this study are significant for clinical practice, suggesting that CBT should be considered a viable and effective treatment option for adolescents experiencing depression. Future research could further explore the long-term effects of CBT and its efficacy across diverse populations and settings. Additionally, integrating CBT with other therapeutic modalities could potentially enhance its effectiveness and provide a more robust treatment framework for depression. In conclusion, this study supports the first hypothesis that Cognitive Behavior Therapy is an effective intervention for reducing depression in adolescents. The significant decrease in depression levels post-intervention highlights the potential of CBT to serve as a cornerstone in the treatment of adolescent depression.

C. Differences in Neuroticism, Conscientiousness, Agreeableness, and Openness Personality Traits in Adolescents After Cognitive Behavior Therapy

The second hypothesis aimed to explore whether there are differences in depression levels among adolescents with varying personality traits—namely, neuroticism, conscientiousness, agreeableness, and openness—after receiving a cognitive behavior therapy intervention. The Kruskal-Wallis Test was employed to analyze the data, resulting in a Kruskal-Wallis value of 6.167 and an Asymp. Sig. value of 0.104. Since the Asymp. Sig. value exceeds the threshold of 0.05 ($p > 0.05$), the results indicate that there are no statistically significant differences in depression levels among adolescents with different personality traits following the intervention. These findings suggest that the cognitive behavior therapy intervention is equally effective across various personality dimensions in reducing depression levels among adolescents. The absence of significant differences implies that the therapeutic benefits of cognitive behavior therapy are not contingent upon the individual's personality traits, supporting its broad applicability and effectiveness in diverse adolescent population.

DISCUSSION

This study investigates the effectiveness of Cognitive Behavior Therapy (CBT) in reducing depression levels among adolescents, focusing on the Big Five personality traits. Negative thoughts are a significant factor closely associated with and causing depression in most adolescents. The more frequently negative thoughts occur, the greater the likelihood of adolescents becoming depressed (Khasanah et al., 2017). People experiencing depression face disturbances that encompass emotional, motivational, functional, behavioral, and cognitive aspects (Desi et al., 2020). Among adolescents, these disturbances often manifest as feelings of hopelessness and a bleak outlook on the future. Such negative perceptions are typically rooted in a distorted self-worth, which exacerbates the symptoms of depression. Adolescents, in particular, tend to feel easily discouraged and struggle to believe that they deserve a bright future, contributing to a cycle of negative thoughts and feelings.

During the CBT sessions, participants revealed negative self-perceptions and a lack of understanding regarding the interplay between emotions, behaviors, and underlying negative thoughts. Participants often referenced others' perceptions as a basis for their own behavior, feeling consistently wrong or unworthy. This reliance on external validation can shape social interactions and behaviors, particularly when participants experience confusion or lack confidence. Cognitive Behavior Therapy (CBT) has been identified as an effective intervention for depression, particularly because it focuses on altering negative thought and behavior patterns. CBT aims to break the cycle of negative thinking by helping individuals recognize and challenge their cognitive distortions. Group CBT, in particular, offers additional benefits for adolescents by providing a support system where they feel understood and not alone in their struggles (Florensa et al., 2016).

CBT comprises six structured sessions designed to reduce adolescent depression levels. These sessions involve preparation and case formulation, identifying negative thought patterns, challenging automatic negative thoughts, modifying core beliefs, conducting behavioral experiments, and evaluating progress. The systematic approach of CBT facilitates the transformation of negative cognitive patterns into more adaptive behaviors and thought processes, enhancing overall psychological well-being. Previous research consistently supports the effectiveness of CBT in reducing depression levels across different populations (Hasanah, 2022). These studies provide empirical evidence that CBT is a robust therapeutic approach capable of mitigating depressive symptoms, regardless of individual personality traits.

The finding of this study reveals that there were no significant differences in depression levels among adolescents characterized by neuroticism, agreeableness, openness, and conscientiousness personalities. This finding is attributed to the adolescents' ongoing developmental stage, where they have not fully matured in their ability to independently seek solutions and still heavily rely on group dynamics for problem-solving. According to Erik Erikson's theory of psychosocial development, adolescents aged 12-18 are actively exploring and forming their identities, beliefs, and life goals, with a more stable identity typically emerging in late adolescence or early adulthood (Santrock, 2024). Piaget's cognitive development theory further suggests that adolescents, in the formal operational stage from age 12 onwards, are beginning to develop abstract thinking skills, although these skills are still developing and not yet fully matured. Adolescents often struggle with making autonomous decisions and are influenced by peer relationships and group interactions.

Regarding the mean rank comparison across the four personality types, neuroticism ranked highest with a mean of 7.50, indicating that adolescents with neuroticism tend to experience a faster reduction in depression levels following CBT compared to other personality types. High neuroticism is linked to heightened negative emotions, anxiety, and strong stress reactions. Consequently, individuals with neuroticism exhibit more pronounced negative thinking patterns that are highly responsive to CBT, which aims to transform these patterns into more rational and adaptive thoughts (Cuijpers et al., 2016). The therapy teaches adolescents to derive satisfaction from daily activities and fosters positive experiences that alleviate depressive symptoms. Agreeableness ranked second with a mean of 5.50, suggesting that individuals with agreeableness may require more time to achieve depression reduction through CBT compared to neuroticism. Adolescents with agreeableness prioritize others' needs over their own and may overly rely on therapist guidance, which can hinder the process of identifying and changing negative thought patterns and irrational beliefs (Brown et al., 2018). This characteristic correlates negatively with CBT effectiveness due to heightened empathy causing emotional stress during therapy sessions. Openness personality types showed a mean of 3.00, indicating a slower reduction in depressive symptoms during CBT compared to neuroticism and agreeableness types. Individuals with openness may struggle with overthinking and ruminating, which disrupts therapy outcomes and results in a slower therapeutic. Lastly, conscientiousness personality types had the lowest mean of 2.00, indicating the slowest reduction in depression levels among the four personalities. Adolescents with conscientiousness tend to set high standards for themselves and may exhibit perfectionistic tendencies, leading to increased self-criticism and unrealistic expectations (Smith et al., 2016). This perfectionism can contribute to stress and anxiety, exacerbating depressive symptoms and hindering therapeutic progress (Clark & Beck, 2018).

In conclusion, this study confirms the efficacy of Cognitive Behavior Therapy in reducing depression levels among adolescents. The structured intervention not only targets negative thought patterns but also fosters positive behavioral changes essential for enhancing mental health outcomes in this age group. These findings highlight the significance of tailoring CBT interventions for adolescents based on their personality traits. While individuals with neuroticism tend to respond more swiftly to CBT through cognitive restructuring, those with agreeableness, openness, and conscientiousness may require customized therapeutic strategies that accommodate their distinct cognitive processes and challenges.

CONCLUSION

Based on the findings and discussion in this study, the first hypothesis indicates that Cognitive Behavior Therapy (CBT) can reduce depression levels in adolescents, thus confirming the hypothesis. The analysis of pretest and post-test data using descriptive Paired Sample T-Test revealed a lower mean post-test compared to pretest among the subjects, suggesting a reduction in depression among adolescent subjects after CBT intervention, with a mean comparison of 56.875. The second hypothesis concerning differences in depression levels among adolescents based on the Big Five personality traits yielded an asymptotic significance value of 0.104 (>0.05), indicating rejection. Statistically, there were no significant differences in depression levels among adolescents after CBT intervention. However, looking at the mean rank results, differences were found with neuroticism at 7.50, agreeableness at 5.50, openness at 3.00, and conscientiousness at 2.00. These findings suggest that subjects with neuroticism tend to experience a quicker reduction in depression levels after CBT compared to those with agreeableness, openness, and conscientiousness personalities. This study also has several limitations, including the researcher's oversight in considering external factors that may hinder the intervention process, such as subject distraction due to different school grade levels' holiday schedules after the final semester exams.

Based on the findings, it is recommended that schools implement CBT-based interventions as part of mental health programs to help reduce depression in adolescents. Further research should explore the long-term effects of CBT and whether additional factors, such as environmental stressors or support systems, may influence depression levels and treatment outcomes. Additionally, future studies should examine whether personalized CBT approaches tailored to specific personality traits could enhance the effectiveness of therapy. Expanding the sample size and including a control group would strengthen the validity of future research findings.

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