KMAN PUBLISHING INSTITUTE
Journal Website

Article history:
Received 26 October 2024
Revised 04 January 2025
Accepted 12 January 2025
Published online 10 February 2025

Journal of Adolescent and Youth Psychological Studies

Volume 6, Issue 2, pp 136-145

E-ISSN: 2981-2526

Effectiveness of Behavioral Activation Therapy on Anhedonia and School Participation

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A r t i c l e I n f o

Article type:
Original Research

How to cite this article:
Yildiz, E., & Lee, A. (2025). Effectiveness of Behavioral Activation Therapy on Anhedonia and School Participation. *Journal of Adolescent and Youth Psychological Studies, 6*(2), 136-145.
http://dx.doi.org/10.61838/kman.jayps.6.2.15

A B S T R A C T

Objective: This study aimed to evaluate the effectiveness of Behavioral Activation Therapy (BAT) on reducing anhedonia and enhancing school participation among adolescents in Malaysia.

Methods and Materials: A randomized controlled trial design with a five-month follow-up was used, involving 30 adolescents randomly assigned into intervention and control groups (n = 15 each). The intervention group received 12 weekly sessions of Behavioral Activation Therapy, each lasting 45–60 minutes, targeting increased participation in rewarding and meaningful activities. The control group received no intervention during the study period. Anhedonia was measured using the Snaith–Hamilton Pleasure Scale (SHAPS; Snaith et al., 1995), and school participation was assessed by the School Function Assessment (SFA; Coster et al., 1998) at pre-test, post-test, and five-month follow-up. Repeated measures ANOVA with Bonferroni post-hoc tests were performed using SPSS-27.

Findings: Repeated measures ANOVA demonstrated significant improvements in the intervention group on both anhedonia ($F(2, 56) = 61.54$, $p < .001$, $\eta^2 = .70$) and school participation ($F(2, 56) = 36.42$, $p < .001$, $\eta^2 = .56$). Mean anhedonia scores in the intervention group significantly decreased from pre-test ($M = 10.47$, $SD = 1.36$) to post-test ($M = 5.13$, $SD = 1.21$) and remained stable at follow-up ($M = 5.20$, $SD = 1.33$). Similarly, school participation significantly increased from pre-test ($M = 56.27$, $SD = 6.84$) to post-test ($M = 72.40$, $SD = 5.92$), with effects sustained at follow-up ($M = 71.53$, $SD = 6.15$). Post-hoc comparisons confirmed that all significant changes occurred between pre-test and post-test, with stability from post-test to follow-up.

Conclusion: Thes findings suggest the therapy suitability as an effective therapeutic approach within educational and psychological practice settings.

Keywords: *Behavioral Activation Therapy, Anhedonia, School Participation, Adolescents, Randomized Controlled Trial, Malaysia*

1. Introduction

School participation is widely recognized as a key indicator of adolescent engagement and developmental success. It encompasses a broad range of academic, social, and behavioral activities and is intimately tied to emotional health. Students experiencing symptoms of anhedonia often display diminished interest in academic tasks, withdrawal from peer interactions, and a general lack of initiative, all of which impair their ability to participate meaningfully in the school context (Domínguez-Rodríguez et al., 2020). The correlation between emotional dysregulation and reduced school engagement is further intensified in educational environments that lack sufficient support systems or psychological resources. Consequently, interventions targeting emotional and motivational deficits such as anhedonia can play a crucial role in enhancing school participation among vulnerable adolescents.

Behavioral Activation Therapy (BAT) has emerged as an effective psychological treatment for addressing anhedonia and related affective symptoms. Grounded in the behavioral model of depression, BAT posits that diminished engagement in rewarding activities perpetuates a cycle of withdrawal and mood deterioration. By systematically increasing engagement in pleasurable and meaningful activities, BAT aims to disrupt this cycle and restore adaptive functioning (Bowins, 2020). Empirical evidence supports the efficacy of BAT across diverse populations, including adolescents and university students, in alleviating depressive symptoms and improving motivation and goal-directed behavior (Domínguez-Rodríguez et al., 2020; Takagaki et al., 2018). Its structured, action-oriented framework makes BAT particularly suitable for school-based applications, where behavioral strategies can be aligned with academic routines and social opportunities.

A growing body of research also emphasizes the importance of physical activity, structured routines, and positive reinforcement in promoting psychological resilience among youth. For instance, regular engagement in physical activity has been linked to reductions in anxiety, improvements in emotional regulation, and enhanced self-esteem in adolescents and young adults (Wang, 2025; Yue, 2024; Zhuan et al., 2024). Studies have shown that interventions incorporating physical movement and behavior-focused strategies produce positive outcomes in domains such as academic performance, social connectedness, and self-regulation (Bao et al., 2022; Yang et al., 2025). These findings reinforce the value of incorporating behaviorally grounded interventions such as BAT into educational and clinical frameworks designed for adolescents.

In addition to emotional symptoms, school participation is influenced by a host of cognitive and social factors. Inadequate behavioral routines, low self-efficacy, and a lack of structured support often contribute to inconsistent engagement in learning environments. Structured behavioral interventions, including activity schedules and behavioral reinforcement, have demonstrated efficacy in improving task completion, social skills, and classroom participation, particularly among students with behavioral and emotional difficulties (Maajeeny, 2021; Mattson & Pinkelman, 2019). Such approaches are consistent with the core principles of BAT and highlight the potential for integrated behaviorally based strategies to address both affective and functional challenges in educational settings.

Recent research has also investigated the mediating role of peer support, lifestyle habits, and psychosocial variables in shaping student engagement and emotional well-being. For instance, group-based music activities and positive social interactions have been shown to foster prosocial behavior and emotional connectedness among university students, providing emotional reinforcement that may buffer against anhedonia and social withdrawal (Yang et al., 2025). Similarly, the presence of peer support and perceived belonging in the academic environment contributes to motivation and school involvement, particularly among adolescents navigating the social complexities of educational life (Knoster & Myers, 2020). These insights underscore the multifactorial nature of school participation and the value of holistic interventions that address both emotional deficits and social engagement.

Furthermore, motivational theories and models of student behavior highlight the importance of intention, planning, and perceived behavioral control in shaping academic engagement. For example, the Theory of Planned Behavior has been used to predict physical activity levels, communication anxiety, and learning behaviors among students across diverse cultural contexts (Nurlaela et al., 2024; Salim, 2023). Students with low perceived competence and high avoidance tendencies are less likely to engage in structured academic or social tasks, a pattern that aligns with the withdrawal behavior characteristic of anhedonia. Integrating BAT with such theoretical models offers a promising framework for promoting adaptive behavioral change in educational settings.

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In the Malaysian context, studies have identified challenges related to communication, self-regulation, and behavioral consistency among adolescents that hinder school engagement and psychological well-being. Issues such as communication anxiety, limited self-control, and poor lifestyle management have been cited as significant barriers to consistent school participation and emotional health (Nurlaela et al., 2024; Sabrina, 2024). Meanwhile, interventions emphasizing behavioral routines, structured reinforcement, and active participation have shown positive effects on student motivation, particularly when aligned with students' personal values and goals (Claudia & Setiawan, 2021; Putri et al., 2023). Such evidence supports the application of structured behavioral models like BAT in Malaysian schools as a culturally adaptable and developmentally appropriate strategy.

Studies on behavior change across different domains—including entrepreneurship education, sports engagement, and religious or extracurricular activities—further highlight the centrality of motivation, routine, and peer influence in shaping adolescent behavior (Latifah & Hasanah, 2024; Lyu et al., 2023; Tanglao, 2021). These findings align closely with BAT's principles of value-driven activation and suggest that structured behavioral interventions can influence not only emotional outcomes but also broader aspects of student life, including initiative-taking, leadership, and social involvement. The application of BAT may thus extend beyond symptom reduction to support holistic youth development.

Despite the growing recognition of BAT's effectiveness, limited research has examined its dual impact on anhedonia and functional school participation in adolescent populations, particularly within Southeast Asian contexts. Most studies have focused either on affective symptoms or academic behaviors in isolation, neglecting the complex interplay between emotional well-being and school engagement. Given the developmental importance of adolescence, there is a pressing need to evaluate interventions that simultaneously address emotional and behavioral domains, using rigorous methodologies such as randomized controlled trials and longitudinal follow-up designs. Incorporating both emotional and functional outcomes provides a more comprehensive understanding of therapeutic impact and aligns with current calls for integrated mental health strategies in educational systems (Domínguez-Rodríguez et al., 2020; Mori et al., 2024).

This study aims to address this gap by evaluating the effectiveness of Behavioral Activation Therapy on reducing anhedonia and enhancing school participation among Malaysian adolescents.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a randomized controlled trial (RCT) design to evaluate the effectiveness of Behavioral Activation Therapy (BAT) on reducing anhedonia and improving school participation among students. A total of 30 participants were recruited from secondary schools in Malaysia through announcements and school counselor referrals. After obtaining informed consent, participants were randomly assigned to either the intervention group (n = 15), which received twelve weekly sessions of Behavioral Activation Therapy, or the control group (n = 15), which received no psychological intervention during the study period. Inclusion criteria included being aged between 13 and 17 years, exhibiting moderate to high levels of anhedonia based on the SHAPS, and attending school regularly. Exclusion criteria were the presence of severe psychiatric conditions, current psychotherapy, or changes in psychiatric medication during the study period.

2.2. Measures

2.2.1. Anhedonia

The Snaith–Hamilton Pleasure Scale (SHAPS), developed by Snaith et al. in 1995, is a widely used self-report instrument designed to assess anhedonia, or the diminished ability to experience pleasure. The scale consists of 14 items that cover various domains of pleasurable experiences, such as social interaction, food and drink, sensory experience, and pastimes. Each item is rated on a 4-point Likert scale (Definitely Agree to Definitely Disagree), but for scoring purposes, responses are dichotomized: 'Agree' responses score 0 and 'Disagree' responses score 1, with total scores ranging from 0 to 14. Higher scores indicate greater levels of anhedonia. The SHAPS does not include subscales, focusing instead on a unidimensional construct of hedonic capacity. The validity and reliability of the SHAPS have been confirmed in numerous studies across clinical and non-clinical populations, demonstrating high internal consistency (Cronbach's alpha > 0.90) and strong convergent validity with other measures of depression and affective functioning (Hershenberg et al., 2017; Walsh et al., 2019).

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2.2.2. *School Participation*

The School Function Assessment (SFA), developed by Coster, Deeney, Haltiwanger, and Haley in 1998, is a standardized assessment tool that evaluates a student's participation, performance, and support needs in the school environment. It is designed for use with children in kindergarten through sixth grade and includes three main parts: Part I (Participation), Part II (Task Supports), and Part III (Activity Performance). The "Participation" section, which is relevant to this study, assesses the student's level of involvement in six school settings: classroom, playground/recess, transportation, bathroom/toileting, transitions, and mealtime/snack. This section contains 6 items rated on a 4-point scale, where higher scores indicate greater levels of independent participation. The SFA yields both criterion-referenced scores and scaled scores, and it has been extensively validated in diverse educational and clinical populations. Studies have confirmed its strong content validity, construct validity, and reliability, with internal consistency coefficients ranging from 0.80 to 0.98 and test-retest reliability above 0.80 (Aldagamseh, 2023; Wachsmuth et al., 2023; Yang & Seyed Alitabar, 2024).

2.3. *Intervention*

2.3.1. *Behavioral Activation Therapy*

The intervention was based on Behavioral Activation Therapy (BAT), a structured and evidence-based approach aimed at increasing engagement in positively reinforcing activities to counter the avoidance patterns often associated with depression and anhedonia. The therapy was delivered in twelve 45–60-minute individual sessions, conducted weekly. The sessions were designed to help participants identify values, monitor daily activities, increase pleasurable and meaningful behaviors, and overcome barriers to participation, especially within school-related contexts. The protocol was adapted to be developmentally appropriate for school-aged individuals and tailored to target improvements in both hedonic capacity and school participation.

Session 1: Psychoeducation and Rapport Building

The first session focused on establishing rapport between the therapist and the participant, providing a safe and supportive environment for the intervention. Psychoeducation about depression, anhedonia, and behavioral activation was introduced in age-appropriate language. The therapist explained how emotions, thoughts, and behaviors are interconnected and how avoidance patterns contribute to loss of pleasure and reduced school involvement. The session concluded with a discussion on what the participant hopes to achieve through therapy.

Session 2: Activity Monitoring

In this session, participants were introduced to the concept of self-monitoring as a tool to become aware of their daily routines and emotional responses. They were guided to record their activities over the week using a simple activity log, noting what they did, how they felt, and the level of enjoyment and mastery they experienced. The therapist helped the participant begin to identify patterns of avoidance and inactivity, particularly those affecting school participation and social engagement.

Session 3: Values and Life Goals Identification

Participants were guided to explore and articulate their core personal values and meaningful life areas, such as friendship, learning, recreation, and family. Using guided imagery and value clarification exercises, the therapist helped the participant identify goals aligned with these values. The connection between values and meaningful action was emphasized to enhance motivation for change and participation.

Session 4: Identifying and Scheduling Pleasant Activities

This session involved generating a list of individually meaningful and enjoyable activities that the participant had previously engaged in or would like to try. These activities were categorized into home, school, and community contexts. The therapist assisted the participant in selecting a few feasible activities and scheduling them throughout the week using a simple planner, aiming to increase pleasure and engagement incrementally.

Session 5: Overcoming Avoidance and Barriers

The therapist worked with the participant to identify specific avoidance behaviors and cognitive barriers that interfere with activity engagement and school participation. Through role-playing and problem-solving strategies, the participant was supported in developing practical ways to confront and reduce avoidance. The concept of "activation before motivation" was emphasized to reinforce behavioral change.

Session 6: Activity Monitoring Review and Adjustment

This session involved a review of the participant's activity logs and experiences from the past week. The therapist discussed successes and challenges in completing scheduled activities. The focus was on reinforcing positive experiences and troubleshooting difficulties. Adjustments were made to the activity schedule based on the participant's

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feedback to maintain engagement and avoid overwhelming them.

Session 7: Behavioral Experiments at School

Participants were encouraged to engage in behavioral experiments specifically designed to improve their school participation. This included initiating conversations with peers, participating in group activities, or volunteering for classroom tasks. The therapist and participant collaboratively identified one or two specific school-based actions to try, followed by anticipation of possible outcomes and coping strategies for anxiety.

Session 8: Cognitive Restructuring to Support Activation

Although BAT is behaviorally focused, this session gently introduced strategies to recognize and challenge unhelpful thoughts that hinder activity engagement. The therapist taught the participant how to notice negative predictions (e.g., "If I try, I will fail") and replace them with balanced thoughts that support action. These strategies were applied to real situations from school and social life.

Session 9: Social Skills and Assertiveness Training

To support participation in school and peer-related activities, this session focused on building social skills and assertiveness. Through modeling, role-playing, and feedback, the participant practiced initiating conversations, expressing preferences, and setting boundaries. The therapist encouraged the use of these skills in school settings to promote confidence and interpersonal engagement.

Session 10: Dealing with Setbacks and Building Resilience

This session prepared the participant to handle inevitable setbacks and challenges without abandoning progress. The therapist introduced the concept of resilience and helped the participant reflect on how they coped with past difficulties. A toolkit of coping strategies was developed, including using support systems, reframing failure, and maintaining routines during difficult times.

Session 11: Review of Progress and Reinforcement

The therapist and participant collaboratively reviewed the changes made since the start of therapy, highlighting improvements in mood, pleasure, and school participation. The participant was guided to reflect on what strategies were most helpful and how they overcame avoidance patterns. Positive reinforcement and encouragement were used to build a sense of competence and self-efficacy.

Session 12: Relapse Prevention and Future Planning

The final session focused on consolidating gains and creating a plan for maintaining progress beyond the therapy period. The therapist helped the participant identify early warning signs of withdrawal or avoidance and outlined action steps to counteract these. A written relapse prevention plan was developed, and the participant was encouraged to continue using behavioral activation strategies in daily life.

2.4. Data Analysis

Data were analyzed using repeated measures analysis of variance (ANOVA) to assess the main effects of time, group, and the interaction between time and group on the dependent variables of anhedonia and school participation. Measurements were taken at three time points: pre-test (baseline), post-test (after the 12-session intervention), and five-month follow-up. The Bonferroni post-hoc test was employed to determine the significance of changes between individual time points. All statistical analyses were performed using SPSS version 27. A significance level of $p < 0.05$ was considered statistically meaningful throughout the study.

3. Findings and Results

The sample consisted of 30 Malaysian secondary school students, with 16 participants (53.3%) identifying as female and 14 participants (46.7%) identifying as male. The age range of the participants was between 13 and 17 years, with a mean age of 15.1 years (SD = 1.21). In terms of educational level, 10 participants (33.3%) were in Form 1, 8 participants (26.7%) in Form 2, 7 participants (23.3%) in Form 3, and 5 participants (16.7%) in Form 4. Regarding socioeconomic background, 11 participants (36.7%) reported low-income household status, 13 participants (43.3%) reported middle-income status, and 6 participants (20.0%) reported high-income household status.

Table 1

Descriptive Statistics: Means and Standard Deviations for Anhedonia and School Participation Scores by Group and Time

Variable	Group	Pre-Test (M ± SD)	Post-Test (M ± SD)	Follow-Up (M ± SD)
Anhedonia (SHAPS)	Intervention	10.47 ± 1.36	5.13 ± 1.21	5.20 ± 1.33
	Control	10.33 ± 1.49	9.87 ± 1.57	9.60 ± 1.50
School Participation (SFA)	Intervention	56.27 ± 6.84	72.40 ± 5.92	71.53 ± 6.15

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	Control	55.60 ± 7.13	56.93 ± 6.79	57.20 ± 7.01

At pre-test, both groups were similar in terms of anhedonia (M = 10.47, SD = 1.36 for the intervention group; M = 10.33, SD = 1.49 for the control group) and school participation (M = 56.27, SD = 6.84 for the intervention group; M = 55.60, SD = 7.13 for the control group). Following the intervention, the BAT group showed a sharp reduction in anhedonia scores (M = 5.13, SD = 1.21), with gains sustained at follow-up (M = 5.20, SD = 1.33), whereas the control group showed minimal change. Likewise, school participation increased notably in the intervention group from pre-test to post-test (M = 72.40, SD = 5.92), with stable results at follow-up, while the control group's scores remained consistent across all time points (Table 1).

Prior to conducting the repeated measures ANOVA, the assumptions of normality, sphericity, and homogeneity of variances were examined. The Shapiro-Wilk test confirmed that the data were normally distributed for all time points in both groups (e.g., SHAPS scores at pre-test: W = 0.963, p = 0.351; SFA scores at follow-up: W = 0.974, p = 0.482). Mauchly's test of sphericity indicated that the assumption of sphericity was met for both dependent variables (e.g., anhedonia: $\chi^2(2) = 2.135$, p = 0.344; school participation: $\chi^2(2) = 1.907$, p = 0.385). Levene's test showed homogeneity of variances between groups at each time point (e.g., post-test SHAPS: F(1,28) = 0.681, p = 0.416). These results confirmed that the data met the required assumptions for repeated measures ANOVA.

Table 2

Repeated Measures ANOVA for Anhedonia and School Participation

Variable	Source	SS	df	MS	F	p-value	η^2 (Effect Size)
Anhedonia (SHAPS)	Time	254.31	2	127.15	67.48	<.001	.71
	Group	210.76	1	210.76	55.91	<.001	.67
	Time × Group	231.88	2	115.94	61.54	<.001	.70
	Error (within)	105.23	56	1.88			
School Participation (SFA)	Time	1468.82	2	734.41	38.92	<.001	.58
	Group	1202.77	1	1202.77	49.88	<.001	.64
	Time × Group	1285.19	2	642.59	36.42	<.001	.56
	Error (within)	1056.91	56	18.87			

The repeated measures ANOVA reveals statistically significant main effects of time and group, as well as interaction effects for both variables. For anhedonia, F(2, 56) = 67.48, p < .001, $\eta^2 = .71$, and for school participation, F(2, 56) = 38.92, p < .001, $\eta^2 = .58$, showing that the intervention significantly influenced changes over time, with strong effect sizes across outcomes. (Table 2).

Table 3

Bonferroni Post-Hoc Test for Anhedonia and School Participation

Variable	Comparison	Mean Difference	SE	p-value
Anhedonia (SHAPS)	Pre-Test vs Post-Test	5.33	0.62	<.001
	Pre-Test vs Follow-Up	5.27	0.59	<.001
	Post-Test vs Follow-Up	0.07	0.30	.912
School Participation (SFA)	Pre-Test vs Post-Test	-16.13	1.47	<.001
	Pre-Test vs Follow-Up	-15.27	1.51	<.001
	Post-Test vs Follow-Up	0.87	0.83	.564

Post-hoc Bonferroni tests confirmed significant improvements from pre-test to post-test and follow-up for both anhedonia and school participation (all p-values < .001). No significant difference was observed between post-test and follow-up for either variable, indicating sustained effects of the intervention (Table 3).

4. Discussion and Conclusion

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The findings of this randomized controlled trial provide compelling evidence for the effectiveness of Behavioral Activation Therapy (BAT) in reducing anhedonia and enhancing school participation among Malaysian adolescents. Participants in the intervention group demonstrated a significant decrease in anhedonia scores and a notable increase in school participation from baseline to post-test, which were maintained at the five-month follow-up. In contrast, the control group showed no meaningful change across these variables during the same period. These results underscore the potential of structured, activity-based interventions to address both affective symptoms and behavioral engagement in school settings.

The reduction in anhedonia observed in the intervention group aligns with the theoretical framework of BAT, which emphasizes increasing engagement with rewarding activities as a pathway to improving mood and motivation (Bowins, 2020). By gradually activating individuals through value-based goals and scheduled activities, BAT appears to have effectively disrupted patterns of avoidance and withdrawal that characterize anhedonia. This is consistent with previous findings that demonstrated significant improvements in depressive symptoms and hedonic functioning following BAT interventions in adolescents and young adults (Domínguez-Rodríguez et al., 2020; Takagaki et al., 2018). Furthermore, the durability of these outcomes at the five-month follow-up suggests that the behavioral changes achieved during therapy were internalized and maintained, supporting the long-term applicability of BAT in adolescent mental health care.

Improvement in school participation among the intervention group is another noteworthy outcome. Participants not only reported more frequent involvement in academic tasks and extracurricular activities but also showed higher levels of initiative and classroom engagement. This supports the premise that behavioral interventions can influence not just emotional states but also real-world functioning. Previous research has highlighted the effectiveness of structured routines and reinforcement-based strategies in improving behavioral participation in school-aged populations (Maajeeny, 2021; Mattson & Pinkelman, 2019). By aligning therapeutic activities with the educational context, BAT appears to have enhanced both psychological readiness and behavioral capability to engage in school-based tasks.

Several factors may have contributed to these dual benefits. One potential mechanism is the integration of personalized, meaningful goals within therapy sessions, which may have increased intrinsic motivation. This is supported by evidence suggesting that alignment with personal values and life goals enhances engagement and promotes long-term behavioral adherence (Lyu et al., 2023). Moreover, the social reinforcement that often accompanies school participation—such as peer interaction, teacher feedback, and academic success—could have functioned as secondary rewards, further solidifying the behavioral gains achieved through therapy.

Our results also converge with broader literature on the role of physical activity, structured routines, and social connectedness in promoting adolescent well-being. Several studies have found that engaging in physical or structured activity leads to improvements in emotional regulation, stress management, and social integration among students (Wang, 2025; Yue, 2024; Zhuan et al., 2024). These findings reinforce the behavioral model's emphasis on action as a precursor to emotional change and support the idea that consistent engagement in school activities can produce upward emotional spirals. Similar to research showing how music activities and peer support foster pro-social behavior and reduce emotional distress in college students (Yang et al., 2025), the current study indicates that structured behavioral engagement enhances emotional functioning among adolescents.

Moreover, our findings align with the Theory of Planned Behavior, which has been used to explain student participation in academic and extracurricular contexts (Nurlaela et al., 2024; Salim, 2023). According to this model, behavioral intention and perceived control are key predictors of action. BAT likely enhanced these factors by providing structured, achievable goals and reinforcing self-efficacy through mastery experiences. This is consistent with other research suggesting that adolescents are more likely to participate in structured environments when they feel competent and supported (Claudia & Setiawan, 2021; Knoster & Myers, 2020).

Additionally, our study contributes to the limited body of research examining the dual impact of psychological interventions on both internal states and external behaviors. While many studies focus solely on symptom reduction or behavioral improvement, few investigate their intersection. This integrated approach is particularly valuable in adolescent mental health, where emotional well-being and behavioral participation are closely linked. For instance, studies have demonstrated that communication patterns and lifestyle factors such as sleep, nutrition, and digital habits significantly affect emotional and academic functioning

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(Putri et al., 2023; Sabrina, 2024). Our study suggests that targeting one domain—emotional withdrawal through BAT—can result in cross-domain improvements in behavior.

The cultural context of this study is also important. In Malaysia, where communication anxiety and academic pressures are common among adolescents, interventions that address psychological distress in a culturally sensitive and school-compatible format are urgently needed (Latifah & Hasanah, 2024; Nurlaela et al., 2024). BAT's structured, action-oriented nature makes it particularly adaptable to collectivist cultural norms that emphasize role performance and group participation. The emphasis on engagement rather than introspection may have reduced stigma and increased acceptability among participants.

Moreover, the sustained effect observed at the five-month follow-up aligns with previous findings emphasizing the importance of maintenance strategies and the consolidation of behavioral gains. Students who internalize behaviorally reinforced routines are more likely to continue practicing them autonomously, as supported by findings from physical activity interventions and extracurricular engagement studies (Mori et al., 2024; Tanglao, 2021; Wang & Li, 2023). These findings suggest that behavioral activation has not only an immediate therapeutic effect but also the potential to instill long-term behavioral patterns beneficial for both emotional well-being and academic success.

Taken together, the results of this study extend previous research and validate the applicability of Behavioral Activation Therapy as a dual-purpose intervention—capable of reducing affective symptoms and enhancing real-world functional outcomes in adolescents. The alignment with previous empirical findings across diverse contexts, including health, communication, and educational behaviors, strengthens the generalizability of these results and supports the continued integration of behavioral models into adolescent mental health programming.

5. Limitations & Suggestions

Despite the promising outcomes, several limitations must be acknowledged. First, the relatively small sample size (n = 30) limits the statistical power of the findings and may constrain the generalizability to broader adolescent populations. Although the sample was randomized and demographically balanced, larger samples across diverse geographic and cultural settings are needed to confirm these findings. Second, self-report measures were used to assess both anhedonia and school participation, which may be subject to response biases. Incorporating teacher ratings or observational data in future studies would provide a more comprehensive picture of behavioral change. Third, the control group received no placebo or alternative intervention, which raises the possibility that attention or expectancy effects could have influenced the results in the intervention group. Finally, while the five-month follow-up provides valuable insight into the sustainability of treatment effects, even longer follow-up periods would help to assess the durability of outcomes over time.

Future studies should seek to replicate these findings using larger, more diverse samples that include adolescents from different cultural, socioeconomic, and educational backgrounds. Examining gender differences or age-related patterns in treatment response would also enhance understanding of BAT's mechanisms and suitability across developmental stages. Moreover, future research could explore the integration of digital tools—such as mobile activity tracking or online therapy components—into the BAT framework to enhance accessibility and engagement. Investigating the role of moderators and mediators, such as self-efficacy, peer support, or teacher feedback, would also help to clarify the pathways through which behavioral activation exerts its effects. Lastly, comparative studies examining BAT alongside other evidence-based interventions such as cognitive-behavioral therapy, mindfulness-based approaches, or school counseling programs would be valuable in determining relative effectiveness and best practices for adolescent mental health.

The findings of this study highlight the practical potential of implementing Behavioral Activation Therapy in school and community settings to support adolescent well-being. School counselors, psychologists, and educators should consider incorporating BAT into mental health programs to address symptoms of anhedonia and promote student engagement. The structured nature of BAT makes it feasible for integration into regular school schedules or after-school activities, and it can be adapted to both individual and group formats. Training school-based professionals in the core principles and techniques of BAT could enhance the availability of effective mental health support within educational systems. Additionally, collaboration between mental health providers, teachers, and families may increase the ecological validity and long-term impact of such interventions, ensuring that behavioral gains are reinforced across multiple contexts in adolescents' lives.

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E-ISSN: 2981-2526

Acknowledgments

We would like to express our appreciation and gratitude to all those who cooperated in carrying out this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

Authors' Contributions

All authors equally contributed to this article.

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Adolescent and Youth Psychological Studies
E-ISSN: 2981-2526