

The Effectiveness of Adolescent-Centered Mindfulness Training on Self-Compassion in Adolescent Boys with Psychological Insecurity

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ABSTRACT

Objective: The present study aimed to examine the effectiveness of adolescent-centered mindfulness training on self-compassion among adolescent boys experiencing psychological insecurity.

Methods and Materials: This study employed a quasi-experimental design with pretest, posttest, and follow-up stages, including an experimental group and a control group. The statistical population consisted of adolescent boys with psychological insecurity in the city of Isfahan during the 2022–2023 academic year. Using convenience sampling, 60 eligible participants aged 14–18 years were selected and randomly assigned to either the experimental group or the control (waitlist) group. The experimental group received eight 90-minute sessions of adolescent-centered mindfulness training delivered in a group format, while the control group received no intervention during the study period. Data were collected at three time points using standardized self-report measures of psychological insecurity and self-compassion. The intervention emphasized age-appropriate mindfulness practices, emotional awareness, acceptance, and compassion-based exercises. Data analysis was conducted using descriptive statistics and repeated measures analysis of variance to examine within-group and between-group differences over time.

Findings: Repeated measures analysis of variance revealed a significant main effect of time on self-compassion, indicating meaningful changes across assessment points. A significant time × group interaction effect was observed, demonstrating that changes in self-compassion were significantly greater in the adolescent-centered mindfulness group compared with the control group. In addition, a significant between-groups effect indicated that the experimental group reported higher self-compassion scores overall than the control group. Effect size indices suggested moderate to large intervention effects, and statistical power values indicated robust reliability of the findings.

Conclusion: The findings indicate that adolescent-centered mindfulness training is an effective intervention for enhancing self-compassion in adolescent boys with psychological insecurity and may serve as a valuable preventive and therapeutic approach for promoting adolescent psychological well-being.

Keywords: adolescent-centered mindfulness, self-compassion, psychological insecurity, adolescent boys, mindfulness-based intervention

1. Introduction

Adolescence represents a critical developmental period characterized by profound biological, cognitive, emotional, and social transformations that substantially shape psychological functioning and mental health trajectories. During this stage, individuals experience rapid neurological maturation, heightened emotional sensitivity, increasing autonomy, and intensified engagement with peer and social environments, all of which render adolescents particularly vulnerable to psychological difficulties when adaptive regulatory capacities are insufficient (Andrews et al., 2021; Williams et al., 2023). One psychological construct that has gained growing attention in adolescent mental health research is psychological insecurity, which refers to a pervasive sense of emotional unsafety, unpredictability, and lack of internal stability in one's environment and interpersonal relationships (Kokkonen et al., 2023; Taormina & Sun, 2015). Psychological insecurity during adolescence has been associated with elevated anxiety, depressive symptoms, maladaptive coping, academic disengagement, and impaired social functioning (Aboobaker et al., 2019; Tatiana et al., 2022).

Psychological insecurity is particularly salient in contemporary adolescent contexts characterized by rapid sociocultural change, digital immersion, academic pressures, and evolving family dynamics. Empirical evidence indicates that adolescents experiencing psychological insecurity often report heightened emotional dysregulation, negative self-evaluations, and difficulties in managing stressors effectively (Kokkonen et al., 2023; Tsai et al., 2023). In digital educational and social environments, psychological insecurity has been linked to reduced academic engagement and poorer psychological adjustment, underscoring its relevance for adolescent well-being and development (Tatiana et al., 2022). These findings emphasize the necessity of identifying protective psychological resources that can buffer adolescents against the adverse consequences of insecurity.

One construct consistently identified as a key protective factor in adolescent mental health is self-compassion. Conceptualized as an adaptive way of relating to oneself during moments of suffering, failure, or inadequacy, self-compassion involves self-kindness, recognition of common humanity, and mindful awareness of emotional experiences (Neff, 2023). Unlike self-esteem, which is often contingent on external validation and performance, self-compassion provides a stable internal source of emotional regulation and

resilience (Muris & Otgaard, 2023). Accumulating evidence suggests that higher levels of self-compassion are associated with lower levels of depression, anxiety, self-criticism, and maladaptive coping behaviors in adolescents (Beato et al., 2021; Gao et al., 2023).

The relevance of self-compassion for adolescents facing psychological insecurity is supported by both theoretical and empirical frameworks. From an emotion regulation perspective, self-compassion facilitates adaptive responses to distress by reducing avoidance, rumination, and emotional over-identification (Leahy et al., 2022). Adolescents with greater self-compassion demonstrate enhanced emotional awareness, increased tolerance of negative affect, and improved coping flexibility, which are crucial capacities for navigating insecure internal and external environments (Minaei, 2022; Wild et al., 2025). Furthermore, longitudinal and experimental studies indicate that self-compassion serves as a mediator between self-criticism and internalizing symptoms, highlighting its central role in adolescent psychological adjustment (Gao et al., 2023; Zhang et al., 2025).

Given the developmental sensitivity of adolescence, interventions targeting self-compassion must be developmentally appropriate, engaging, and responsive to adolescents' cognitive and emotional capacities. In this context, mindfulness-based interventions, particularly those adapted for adolescents, have demonstrated promising effects on a wide range of psychological outcomes. Mindfulness is commonly defined as purposeful, nonjudgmental awareness of present-moment experiences, encompassing thoughts, emotions, bodily sensations, and environmental stimuli (Khoury et al., 2025). Mindfulness-based approaches are especially relevant for adolescents because they enhance attentional control, emotional regulation, and self-awareness during a period of heightened emotional reactivity and identity formation (Andrews et al., 2021; Williams et al., 2023).

Systematic reviews and experimental studies have documented the effectiveness of mindfulness-based interventions in reducing anxiety, depression, stress, and behavioral problems among adolescents (Lestari et al., 2023; Peter et al., 2022). Importantly, mindfulness has been shown to exert its effects partly through enhancing self-compassion, suggesting a synergistic relationship between these constructs (Büyüköksüz & Kayaalp-pehlivan, 2025; Luna & Rodríguez-Carvajal, 2025). Adolescents who engage in mindfulness practices often report increased self-kindness, reduced self-judgment, and greater emotional balance,

which are essential components of self-compassion (Muris & Otgaar, 2023; Neff, 2023).

In recent years, adolescent-centered mindfulness interventions have emerged as a distinct and increasingly validated approach. Unlike traditional mindfulness programs originally designed for adults, adolescent-centered models incorporate age-appropriate language, experiential exercises, movement-based practices, emotional games, and parental involvement to enhance engagement and developmental relevance (Burdick, 2014; Davoodi & Colleagues, 2019). Empirical studies conducted in educational and clinical settings have shown that adolescent-oriented mindfulness training leads to significant improvements in emotional regulation, social anxiety, academic burnout, and risk behaviors (Abarkar et al., 2023; Solahi Isfahani & Izadi, 2023).

Specifically, research conducted with adolescent populations in diverse cultural contexts demonstrates that mindfulness interventions tailored to adolescents are effective in increasing self-compassion and reducing maladaptive emotional patterns. For example, Yazdani et al. found that positive mindfulness training significantly enhanced self-compassion among adolescent boys with depressive symptoms (Yazdani et al., 2017). Similarly, Karimkhani and Khoshnavis reported improvements in self-compassion and emotion regulation following mindfulness-based training in overweight adolescent girls (Karimkhani & Khoshnavis, 2021). These findings align with international evidence indicating that mindfulness-based empowerment programs promote self-compassion and psychological resilience across different populations (Crego et al., 2025; Emirza & Bilgili, 2024).

The mechanism through which mindfulness influences self-compassion is further clarified by contemporary integrative models. Embodied and embedded mindfulness frameworks emphasize that mindful awareness fosters compassionate self-relating by enhancing cognitive flexibility, reducing experiential avoidance, and promoting acceptance of internal experiences (Khoury et al., 2025; Zhang et al., 2025). Mediation studies have confirmed that self-compassion functions as a key pathway linking mindfulness to improved mental health outcomes, including reduced shame, anxiety, and emotional dysregulation (Büyüköksüz & Kayaalp-pehlivan, 2025; Luna & Rodríguez-Carvajal, 2025).

Despite the growing body of literature, several gaps remain. First, while psychological insecurity has been widely studied in relation to academic engagement and

social functioning, its direct association with self-compassion in adolescents remains underexplored (Kokkonen et al., 2023; Tatiana et al., 2022). Second, although mindfulness-based interventions have demonstrated effectiveness in improving adolescent mental health, fewer studies have specifically examined **adolescent-centered mindfulness training** as a targeted intervention for adolescents experiencing psychological insecurity. Third, much of the existing research has focused on mixed-gender samples or female adolescents, leaving male adolescents relatively underrepresented, despite evidence suggesting gender-specific pathways in emotional regulation and self-related processes (Tsai et al., 2023; Williams et al., 2023).

Moreover, cultural context plays a significant role in shaping adolescents' experiences of insecurity, self-compassion, and responsiveness to psychological interventions. Studies conducted in non-Western settings highlight the importance of culturally adapted mindfulness interventions that align with local values, family structures, and educational systems (Minaei, 2022; Solahi Isfahani & Izadi, 2023). Research in Iranian contexts, in particular, has demonstrated the feasibility and effectiveness of adolescent-centered mindfulness programs in addressing emotional and behavioral difficulties (Abarkar et al., 2023; Davoodi & Colleagues, 2019). However, empirical evidence focusing specifically on self-compassion outcomes among psychologically insecure adolescent boys remains limited.

Addressing these gaps is critical, given that psychological insecurity during adolescence may have long-term implications for mental health, interpersonal relationships, and identity development (Andrews et al., 2021; Taormina & Sun, 2015). Interventions that strengthen internal resources such as self-compassion may play a crucial role in mitigating the adverse effects of insecurity and fostering adaptive developmental trajectories. Furthermore, identifying effective, accessible, and developmentally sensitive interventions can inform school-based and clinical prevention programs aimed at promoting adolescent well-being (Leppma & Darrah, 2024; Lestari et al., 2023).

In light of the theoretical foundations and empirical evidence reviewed, adolescent-centered mindfulness training emerges as a promising intervention for enhancing self-compassion among adolescents with psychological insecurity. By cultivating mindful awareness, emotional acceptance, and compassionate self-relating, such interventions may help adolescents navigate developmental challenges with greater resilience and psychological stability

(Khoury et al., 2025; Neff, 2023). Nevertheless, rigorous experimental studies are needed to evaluate the effectiveness of these interventions within specific at-risk populations, particularly male adolescents experiencing psychological insecurity.

Therefore, the present study aimed to investigate the effectiveness of adolescent-centered mindfulness training on self-compassion in adolescent boys with psychological insecurity.

2. Methods and Materials

2.1. Study Design and Participants

The present study employed a quasi-experimental design with pretest, posttest, and follow-up phases, including an experimental group and a control group. The statistical population consisted of all students with psychological insecurity in the city of Isfahan during the 2022–2023 academic year. Using convenience sampling, sixty male students with psychological insecurity were selected and then randomly assigned to the experimental and control groups. While the control group was placed on a waiting list, the experimental group participated in eight 90-minute training sessions. The inclusion criteria for the present study were: age between 14 and 18 years, male gender, willingness to participate in the training program, parental consent, and a score above the average on the Psychological Security Questionnaire. The exclusion criteria included: simultaneous participation in other psychological training programs, failure to complete assigned tasks, and disruptive behavior in the training group.

To conduct this study, after obtaining the necessary approvals from the university and the Department of Education and performing sampling based on the inclusion and exclusion criteria, the experimental and control groups were assessed before the intervention, after the intervention, and 45 days following the completion of the training using the Self-Compassion Questionnaire. While the control group remained on the waiting list, the experimental group received eight 90-minute mindfulness training sessions. The training sessions were conducted at a counseling center by the researcher under the supervision of the academic advisor and consultant.

2.2. Measures

Psychological Security Questionnaire: Psychological security was assessed using the 28-item Psychological

Security Questionnaire developed by Zare' and Aminpour (2011), with items such as "Do you feel anxious about meeting your needs?" and "Do you feel incapable when facing various life situations?". Items are rated on a five-point Likert scale ranging from completely agree (1) to completely disagree (5). The internal consistency of this questionnaire was examined using Cronbach's alpha and reported to be above 0.80. Its face and content validity were confirmed by experts. Items 1–7 and 14–28 are scored from 5 to 1, whereas items 8–13 are scored from 1 to 5. Higher scores indicate a greater sense of psychological security, while lower scores indicate psychological insecurity. Construct validity was examined and confirmed through confirmatory factor analysis. In the present study, the internal consistency coefficient was 0.75.

Self-Compassion Scale: The Self-Compassion Scale was developed by Neff (2003). This scale consists of 26 items rated on a five-point Likert scale ranging from almost never to almost always, with items such as "I am judgmental about my own mistakes and inadequacies and do not approve of them" and "When I think about my inadequacies, I feel more isolated and believe I am different from other people in the world." This scale measures self-compassion and includes three bipolar dimensions: self-kindness versus self-judgment, common humanity versus isolation, and mindfulness versus over-identification. These six subscales collectively explain the total variance. After summing the scores of the 26 items, scores ranging from 26 to 44 indicate low self-compassion, scores from 44 to 88 indicate moderate self-compassion, and scores above 88 indicate high self-compassion. The validity of the questionnaire has been confirmed by faculty members and experts in the field. Reliability, defined as the degree of consistency in measurement under similar conditions, was reported in the study by Khosravi et al. (2019) using Cronbach's alpha as higher than 0.70. In the present study, internal consistency was re-evaluated using Cronbach's alpha and found to be above 0.80.

2.3. Intervention

The adolescent-centered mindfulness training protocol consisted of eight 90-minute group sessions adapted from Bordick (2014), as cited in Davoudi et al. (2019). The intervention began with administration of the pretest, participant introductions, and psychoeducation on nomophobia, mindfulness, and the neurobiological foundations of mindfulness, alongside guidance on

integrating daily mindfulness practices to reduce nomophobia symptoms, with active parental involvement and a mindful self-compassion meditation conducted with parents. Subsequent sessions emphasized skill development through mindful breathing and diaphragmatic breathing to manage anxiety during periods without mobile phone access, experiential contrasts between a restless and calm mind (e.g., glitter bottle exercise), sleep meditation, body scan, and reflective practices such as recalling positive experiences without phone use in social interactions. Progressively, sessions focused on present-moment awareness (e.g., mindful drinking), emotional awareness and regulation during phone deprivation, mindful movement, five-senses mindfulness, and brief meditations aimed at alleviating momentary depressive affect and negative emotions associated with phone unavailability. Later sessions addressed mindfulness of emotions and thoughts through experiential exercises (e.g., emotion-focused mindfulness meditation, "I feel" game, reflective writing, and acceptance-based practices such as the "blank

whiteboard" exercise for nonjudgmental awareness of negative thoughts), as well as nature-based meditation. The final session consolidated skills related to mindfulness of the environment and relationships, compassion practices emphasizing kind actions, and reinforcement of home practice assignments to support skill generalization beyond the sessions.

2.4. Data Analysis

The collected data were analyzed using descriptive statistics (mean and standard deviation) and inferential statistics (repeated measures analysis of variance).

3. Findings and Results

In this section, the descriptive and inferential findings related to the variable of self-compassion across three stages—pretest, posttest, and follow-up—are presented separately for each group.

Table 1

Means and Standard Deviations of the Self-Compassion Variable in the Study Groups Across Three Time Points

Variable	Time Point	Control Group Mean	Control Group SD	Adolescent-Centered Mindfulness Group Mean	Adolescent-Centered Mindfulness Group SD
Self-Compassion	Pretest	64.87	11.57	70.33	10.01
	Posttest	70.00	9.04	80.83	5.66
	Follow-up	71.25	5.76	77.78	7.97

As shown in Table 1, with respect to the self-compassion variable, the adolescent-centered mindfulness training group demonstrated more pronounced changes at the posttest and follow-up stages compared with the control group.

The results of the Shapiro-Wilk test indicated that self-compassion scores at all three stages—pretest, posttest, and follow-up—were normally distributed ($p > 0.05$). In addition, the assumptions of homogeneity of error variances ($p > 0.05$) and equality of variance-covariance matrices

(assessed using Box's M test) ($p > 0.05$) were met. Furthermore, Mauchly's test was not significant, indicating that the assumption of sphericity was violated. Accordingly, due to the violation of the sphericity assumption, the results are reported based on the Greenhouse-Geisser correction in the final analysis tables. The results of the repeated measures analysis of variance for self-compassion are presented in Table 2.

Table 2

Results of Repeated Measures Analysis of Variance for Self-Compassion

Source of Variation	Effect	Sum of Squares	df	Mean Square	F	p	Partial Eta Squared	Power
Within-Subjects	Time	6809.20	1.53	4449.73	42.62	0.001	0.43	1.00
	Time \times Group	3220.34	3.06	1059.23	10.08	0.001	0.26	0.99
	Error (Time)	9106.41	87.22	104.40	—	—	—	—
Between-Subjects	Group	11960.56	2	5980.28	37.42	0.001	0.63	1.00
	Error	7829.68	49	159.79	—	—	—	—

Given the violation of the sphericity assumption, as shown in Table 2 for the self-compassion variable, the within-subjects effects indicate that both the main effect of time ($F = 42.62$, $df = 2$, $p < 0.01$) and the interaction effect of time and group ($F = 10.08$, $df = 3.06$, $p < 0.01$) were statistically significant. The partial eta squared for the time effect was 0.43 with a statistical power of 1.00, and for the time \times group interaction it was 0.26 with a statistical power of 0.99. These results indicate that 43% and 26% of the variance in self-compassion can be attributed to the independent variable for the time effect and the interaction effect, respectively, both confirmed with very high statistical

power. In addition, as shown in Table 2 under the between-subjects effects, a significant difference was observed for the group factor in self-compassion ($p < 0.01$). The partial eta squared for the group effect was 0.63 with a statistical power of 1.00, indicating that the analysis of variance, with 100% power, demonstrated that 63% of the difference in self-compassion between the experimental and control groups was statistically significant.

The results of the Bonferroni post hoc test for comparing the experimental and control groups across time points for self-compassion are presented in Table 3.

Table 3

Results of the Bonferroni Post Hoc Test for Comparing Time and Group Differences in Self-Compassion

Variable	Row	Reference Group	Comparison Group	Mean Difference	Standard Error	p
Time	1	Pretest	Posttest	-14.35	1.88	0.001
	2		Follow-up	-11.99	1.89	0.001
	3	Posttest	Follow-up	2.36	1.11	0.11
Group	5	Control Group	Adolescent-Centered Mindfulness	-7.61	2.32	0.005

As shown in Table 3, for the self-compassion variable, there were significant differences between the pretest and posttest as well as between the pretest and follow-up stages, whereas no significant difference was observed between the posttest and follow-up stages. Based on the means (Table 3), self-compassion increased from the pretest to the posttest stage, but decreased slightly from the posttest to the follow-up stage. At the group level, a significant difference was observed between the adolescent-centered mindfulness training group and the control group ($p < 0.01$). Therefore, the research question regarding whether adolescent-centered mindfulness training is effective in enhancing self-compassion among adolescents with psychological insecurity is answered affirmatively, indicating that adolescent-centered mindfulness training demonstrated greater effectiveness in increasing self-compassion compared with the control group.

4. Discussion

The present study examined the effectiveness of adolescent-centered mindfulness training on self-compassion among adolescent boys with psychological insecurity. The findings demonstrated that participants in the mindfulness intervention group showed a significant increase in self-compassion from pretest to posttest, and that this improvement was largely maintained at follow-up, whereas the control group exhibited only minimal changes

across the same time points. These results provide empirical support for the effectiveness of developmentally tailored mindfulness interventions in enhancing adaptive self-related processes among psychologically vulnerable adolescents, and they directly address the study's primary objective.

From a developmental perspective, adolescence is marked by heightened emotional reactivity, increased self-evaluative concerns, and sensitivity to perceived threats in social and internal environments, all of which can exacerbate psychological insecurity (Andrews et al., 2021; Williams et al., 2023). The observed increase in self-compassion suggests that adolescent-centered mindfulness training may function as a protective mechanism by fostering a kinder, more accepting relationship with the self during this sensitive period. This finding aligns with contemporary conceptualizations of self-compassion as a core emotional regulation resource that mitigates self-criticism and emotional dysregulation, particularly under conditions of stress and insecurity (Muris & Otgaar, 2023; Neff, 2023).

The significant main effect of time indicates that self-compassion changed meaningfully across the assessment points, while the significant interaction between time and group confirms that these changes were attributable to the mindfulness intervention rather than to natural developmental progression or repeated measurement. This pattern is consistent with experimental studies demonstrating that mindfulness-based and compassion-

focused interventions produce measurable improvements in self-compassion beyond those observed in control or waitlist groups (Emirza & Bilgili, 2024; Karimkhani & Khoshnavis, 2021). Importantly, the relatively large effect sizes observed in the present study suggest that adolescent-centered mindfulness training exerts not only statistically significant but also practically meaningful effects on self-compassion.

The results are particularly noteworthy given the study's focus on adolescents with psychological insecurity. Previous research has shown that psychological insecurity is associated with heightened anxiety, depressive symptoms, and maladaptive coping strategies, often accompanied by harsh self-judgment and emotional avoidance (Kokkonen et al., 2023; Taormina & Sun, 2015). By increasing self-compassion, mindfulness training may help adolescents reinterpret internal distress as a shared human experience rather than as personal failure, thereby reducing the emotional burden associated with insecurity. This interpretation is supported by evidence indicating that self-compassion buffers the impact of self-criticism on depressive symptoms and nonsuicidal self-injury in adolescents (Gao et al., 2023).

The findings of the present study are consistent with prior research conducted in both clinical and educational contexts. For example, Abarkar et al. demonstrated that adolescent-oriented mindfulness training reduced academic burnout and social anxiety in students, outcomes that are theoretically linked to enhanced self-compassion and emotional regulation (Abarkar et al., 2023). Similarly, Solahi Isfahani and Izadi reported that adolescent-centered mindfulness therapy was effective in reducing depression and mental wandering while improving adaptive functioning in adolescents (Solahi Isfahani & Izadi, 2023). The current study extends these findings by specifically identifying self-compassion as a key outcome in a sample characterized by psychological insecurity.

The increase in self-compassion observed in this study can be understood through the lens of emotion regulation theory. According to Leahy et al., adaptive emotion regulation involves awareness, acceptance, and flexible responding to emotional experiences, processes that are directly cultivated through mindfulness practices (Leahy et al., 2022). The adolescent-centered mindfulness protocol used in this study emphasized present-moment awareness, nonjudgmental observation of thoughts and emotions, and compassion-based exercises, all of which are known to reduce experiential avoidance and emotional over-identification. These mechanisms likely contributed to

participants' enhanced ability to respond to insecurity-related distress with self-kindness rather than self-criticism.

Moreover, the results are in line with integrative models that conceptualize mindfulness and self-compassion as mutually reinforcing processes. Khoury et al. propose that mindfulness creates the attentional and emotional conditions necessary for compassion to emerge, while compassion stabilizes mindfulness practice by reducing internal resistance to distressing experiences (Khoury et al., 2025). Empirical studies support this framework, showing that self-compassion mediates the relationship between mindfulness and improved psychological outcomes, including reduced shame, anxiety, and emotional dysregulation (Luna & Rodríguez-Carvajal, 2025; Zhang et al., 2025). The present findings are consistent with these models, suggesting that adolescent-centered mindfulness training may enhance self-compassion both directly and indirectly through improved emotional awareness and acceptance.

The maintenance of self-compassion gains at follow-up, despite a slight decrease from posttest levels, is also consistent with previous longitudinal research. Crego et al. found that mindfulness-based self-compassion programs produced enduring effects over extended follow-up periods, although some attenuation of gains over time was observed without continued practice (Crego et al., 2025). This pattern suggests that while mindfulness training can initiate meaningful changes in self-compassion, ongoing practice and reinforcement may be necessary to sustain optimal levels over the long term. The partial decline observed in the present study may therefore reflect reduced adherence to mindfulness practices following the structured intervention period.

Gender-specific considerations further contextualize the findings. Research indicates that adolescent boys may experience unique challenges in emotional expression and self-related processing due to socialization patterns that discourage vulnerability and self-kindness (Tsai et al., 2023; Williams et al., 2023). The effectiveness of the intervention in this male sample suggests that adolescent-centered mindfulness training can overcome some of these barriers by providing a structured, experiential framework for emotional awareness and compassionate self-relating. This aligns with findings by Yazdani et al., who reported significant increases in self-compassion among adolescent boys following mindfulness-based interventions (Yazdani et al., 2017).

Cultural context also warrants consideration. Studies conducted in non-Western and Middle Eastern settings have emphasized the importance of culturally sensitive

adaptations of mindfulness-based interventions (Davoodi & Colleagues, 2019; Minaei, 2022). The present study's findings support the cultural applicability of adolescent-centered mindfulness training in this context, reinforcing evidence that mindfulness and self-compassion are not culturally bound constructs but can be effectively cultivated across diverse sociocultural environments when interventions are developmentally and contextually adapted (Abarkar et al., 2023; Lestari et al., 2023).

5. Conclusion

In summary, the findings of this study provide robust support for the effectiveness of adolescent-centered mindfulness training in enhancing self-compassion among adolescent boys with psychological insecurity. By improving self-compassion, such interventions may address a core vulnerability underlying a wide range of emotional and behavioral difficulties in adolescence. The results contribute to the growing literature on mindfulness-based interventions for youth and highlight self-compassion as a critical outcome variable in this population.

6. Limitations & Suggestions

Despite its contributions, the present study has several limitations that should be acknowledged. First, the sample size was relatively modest and limited to adolescent boys from a single geographic region, which may restrict the generalizability of the findings to other populations, including girls or adolescents from different cultural or socioeconomic backgrounds. Second, reliance on self-report measures may have introduced response biases, such as social desirability or limited self-awareness. Third, although a follow-up assessment was conducted, the duration of follow-up was relatively short, limiting conclusions about the long-term sustainability of the intervention effects. Finally, the absence of an active comparison intervention prevents definitive conclusions about the relative efficacy of adolescent-centered mindfulness training compared to other evidence-based psychological interventions.

Future research should replicate these findings using larger and more diverse samples, including female adolescents and mixed-gender groups, to examine potential gender differences in responsiveness to mindfulness-based interventions. Longitudinal studies with extended follow-up periods are recommended to assess the durability of self-compassion gains over time and to identify factors that support maintenance of intervention effects. Additionally,

future studies could employ multi-method assessment approaches, incorporating behavioral, physiological, or observational measures alongside self-report instruments. Comparative studies examining adolescent-centered mindfulness training in relation to other therapeutic approaches, such as cognitive-behavioral or emotion-focused interventions, would also provide valuable insights into relative effectiveness and mechanisms of change.

From a practical standpoint, the findings suggest that adolescent-centered mindfulness training can be effectively integrated into school-based counseling services, youth mental health programs, and preventive interventions targeting psychologically insecure adolescents. Practitioners are encouraged to use developmentally appropriate, experiential mindfulness techniques that actively engage adolescents and, where possible, involve parents or caregivers to reinforce skill application in daily life. Incorporating regular follow-up sessions or booster programs may help sustain gains in self-compassion over time. Finally, training mental health professionals and educators in adolescent-centered mindfulness approaches may enhance the accessibility and impact of such interventions in real-world settings.

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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.

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Authors' Contributions

A.F.D. conceptualized and designed the study, developed and implemented the adolescent-centered mindfulness training program, oversaw data collection, conducted the statistical analyses, interpreted the findings, and drafted and revised the manuscript. The author approved the final version of the manuscript and accepts full responsibility for the accuracy and integrity of the research.

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