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Evaluating the Effectiveness of a Short-Term Intensive Mindfulness-Based Skills Training Program in Adolescents: a Real-World Group-Based Study

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Abstract. Mindfulness-based cognitive therapy is an evidence-based group intervention, typically delivered in an eight-week standard protocol, which has limited accessibility, especially for Chinese adolescents. This study evaluated an intensive, one-week mindfulness-based skills training program designed to improve engagement among adolescents. Participants (N = 14, aged 12-22, M_{age} = 16.33, SD_{age} = 2.53) completed standardized self-report measures of anxiety (BAI), depression (CDI), perceived stress (PSS), resilience (CD-RISC), mindfulness level (FFMQ), and mood (POMS) before and after the intervention. Paired t-tests were applied to assess psychological changes, and missing data was handled via mean imputation within subscales. Results indicated reductions in POMS tension–anxiety ($p < .05$, $d = 0.087$) and fatigue ($p < .05$, $d = 0.285$), as well as increases in FFMQ observing ($p < .05$, $d = 0.650$) and non-reactivity ($p < .05$, $d = 0.727$). However, the increase in CDI and PSS scores suggests that improved emotional awareness without sufficient coping strategies, such as acceptance and loving-kindness, may have negative effects. These findings support the hypothesis that a condensed mindfulness-based skills training program may improve specific dimensions of mindfulness and decrease mood disturbances in adolescents. The intensive treatment also has better cost-effectiveness and flexibility in time. However, effects were limited by design and sample size. The increases in distress and depression also highlight the need for adjustments in pacing and more focus on integration of skills. Given the mixed outcomes, future research should be based on a randomized controlled trial (RCT) to compare the immediate and long-term effects of the intervention with a manualized eight-week MBCT program.

Keywords: mindfulness, mindfulness-based cognitive therapy, group therapy, psychotherapy, adolescents

1. Introduction

There are various definitions of mindfulness, but three key elements are often highlighted: intention to foster awareness, being aware of the present, and a non-judgmental attitude [1]. In psychotherapy,

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mindfulness has been applied to several structured interventions. The most established programs include Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT). Mindfulness plays a central role in interventions like Acceptance and Commitment Therapy (ACT) and Dialectical Behaviour Therapy (DBT). There is evidence from several studies that Mindfulness-based Interventions (MBIs) alleviate symptoms of various mental disorders, such as complex post-traumatic stress disorders(c-PTSD) and eating disorders [2, 3].

The standard MBCT combines mindfulness practices with cognitive-behavioural elements originated from Cognitive Behavioural Therapies (CBT). It is typically delivered once a week over eight weeks. A recent meta-analysis further highlighted MBCT's effectiveness in reducing depressive symptoms. Patients in MBCT group showed symptom reduction with a large effect size, while those in other interventions (e.g., ACT, DBT) showed only small to medium effects. The analysis also found that mindfulness-based interventions worked not only for depressive disorders but also across a range of other mental health conditions, including anxiety [4].

MBCT has been adapted for younger populations as well. Studies suggest it boosts emotional regulation and resilience among adolescents [5].

At the same time, research on other group-based interventions, such as psychodynamic therapy (PD) and DBT, showed that condensed versions of treatment can also be effective. Meta-analyses indicate that abbreviated formats of PD and DBT can lead to meaningful improvements in mental state. For example, an eight-week DBT protocol in adolescent populations significantly reduced pervasive emotion dysregulation [6, 7]. These findings raise the question of whether shortened MBCT interventions could produce comparable results.

This study addresses this gap by evaluating a seven-day intensive MBCT-based program for adolescents. This program differs from the conventional weekly format in both duration and delivery, aiming to accommodate participants' scheduling needs and improve accessibility for adolescents and young adults in China. The central research question is whether such changes can result in measurable benefits. In this study, effectiveness is defined operationally as a reduction in symptoms and improvements in psychological resources assessed by a set of self-report scales.

2. Method

2.1. Design

We developed the mindfulness-based skills training (MBST) program based on MBCT principles, also drawing elements from DBT and CBT. This short-term intensive version consists of eight sessions delivered in one week. To be more specific, sessions 1–4 on four weekdays, then two sessions delivered consecutively on Friday (sessions 5–6) and two on Sunday (sessions 7–8). Each session was approximately 90 minutes. Table 1 shows the detailed course format.

As shown in the table, this program has three modules: focus and attention, emotional regulation, and open monitoring.

Table 1. Format

Module	Session	Content
	1	Ice-breaking Progressive Muscle Relaxation Raisin exercise

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Table 1. (continued)

Attention & Focus	2	Observing
		Psychoeducation - focus
		Contact point awareness
	3	Box Breathing
		Sound Meditation
		2-4 Breathing
		Mindfulness movement
	4	Body scan
		Mindful stretching
Emotion Regulation	5~6	Psychoeducation - recognizing emotions
		Sitting meditation
		Butterfly hug
		TIPS/TIPP
		Candybox meditation
Open-Monitoring	7~8	Psychoeducation - resilience
		3-minute breathing space
		Mindful walking
		Mindfulness word observation
		Mindful reading
		Farewell

2.2. Participants

Two therapy groups were included in this study. 14 out of 17 participants who were initially enrolled were ultimately involved in the final data analysis. Subjects aged between 12 and 22 years (Average age 16.33, SD 2.53). 50% of the participants were female.

Kuyken et al. [8] conducted an RCT comparing MBCT and maintenance antidepressants (mADM), and we based our inclusion and exclusion criteria on this study.

All participants recruited met criteria for major depressive disorder or generalized anxiety disorder in full or partial remission, as defined by DSM-5 or ICD-11 and expressed willingness and had the ability to participate in an MBCT group intervention. Exclusion criteria included history of suicidal attempts or engagement in persistent self-harm, ongoing modified electroconvulsive therapy (MECT), organic brain damage, substance abuse, current or past diagnosis of psychosis, and persistent antisocial behavior [8].

Participants were drawn from two therapy groups. Group 1 consisted of 10 participants; there were no leaves or absences, and all completed the program; group 2 initially enrolled 7 participants,

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of whom 2 dropped out, and among the 5 who completed the therapy, there were no leaves and 1 absence.

Table 2. Demographic information

Medication Category	n	%
Antidepressant	6	42.86%
Mood stabilizer	6	42.86%
Antipsychotic	7	50.00%
Stimulants/Non-stimulants	1	7.14%
TCM/Herbal	2	14.29%
Others	1	7.14%
None	2	14.29%
Unknown	1	7.14%

Note. n = 14. Percentages total more than 100% because some participants were prescribed multiple medications

2.3. Questionnaires

The following Chinese versions of standardized scales were used:

The Beck Anxiety Inventory (BAI-21) is a single-factor scale that was used to measure the severity of anxiety symptoms [9]. The Chinese version has demonstrated strong reliability (Cronbach's α between 0.74 and 0.87) [10].

The Children's Depression Inventory (CDI) was used to evaluate depressive symptoms in children and adolescents, including negative mood, interpersonal problems, ineffectiveness, anhedonia and negative self-esteem [11]. The Chinese version has shown acceptable internal consistency (Cronbach's α=0.872) [12].

The Perceived Stress Scale (PSS) was used to assess individuals' perceived distress and perceived coping capacity [13]. The Chinese version has demonstrated good reliability (Cronbach's α=0.78) [14].

The Connor-Davidson Resilience Scale (CD-RISC) was used to evaluate resilience, or the ability to cope with stress and adversity [15]. The Chinese version has shown good internal consistency (Cronbach's α=0.91) [16].

The Five Facets Mindfulness Questionnaire (FFMQ) is a five-factor scale that measures five dimensions of mindfulness, including observing, describing, acting with awareness, non-judging attitude, and non-reactivity [17]. The Chinese version has demonstrated good internal consistency (Cronbach's α=0.757) [18].

The Profile of Mood States (POMS): Assesses seven temporary affective states, including tension-anxiety, depression, anger-hostility, vigor-activity, fatigue, confusion-bewilderment and emotions relating to oneself [19]. The Chinese version has shown good internal consistency (Cronbach's α ranging from 0.62 to 0.82) [20].

2.4. Procedure

Participant recruitment took place at the Non-drug Treatment Center of Nanjing Brain Hospital. Participants were recruited through internal referral and self-referral. Clients may be referred by their individual therapists within the center or by outpatient psychiatrists based on clinical judgment

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of their suitability for group therapy; for self-referral, clients may come to the center to seek psychological treatment, often after obtaining information through online sources, such as the official social media account of the hospital. Anyone interested in the therapy had an initial individual consultation to see if they were eligible. Trained therapists assessed each client against the inclusion/exclusion criteria mentioned before.

We used a set of self-report questionnaires to assess how participants changed before and after the intervention. The pre-test was administered before the first session and the post-test before the last session. Participants completed the paper-and-pencil questionnaires in therapy group settings. The same set of questionnaires was used at both time points and presented in the same order.

We printed all scales on paper and stapled them together into a booklet to make it easier to fill out. The order of the measures followed the same order as listed above.

The two group therapies were delivered by the same therapist to ensure consistency. There were two co-therapists for each group. The co-therapists were different for the two groups. Co-therapists were responsible for observing the therapy process and providing support for participants and therapist, but for most of the time would not be directly involved in the delivery of the therapy.

2.5. Missing data

This study handled missing data on the person-level, the construct level and the item-level. At the person level, sample attrition occurred mainly due to drop-out during the therapy. Of the two groups of participants, no drop-out occurred for group 1, yet group 2 started with 7 participants and ended with 5, meaning that in total 14 (83.3%) adolescents completed the study. To control data quality, one participant was excluded from the final analysis due to invalid data. The participant exhibited significant non-compliance during the intervention and provided predominantly negative written feedback during intervention. Their post-test responses demonstrated a clear pattern of selecting the most extreme negative scores on all positively worded items. Given the behavioral observations and written comments, we concluded that the participant's responses were not reflective of their true state but rather represented a reactive behavior, illustrating inverted social desirability bias. Therefore, this data point was removed as invalid noise.

At the construct level, one participant was identified with omitting the PSS, CD-RISC and FFMQ in the post-test entirely. The participant self-reported poor emotional state and chose to discontinue the post-test. Given that the missingness was confined to these three scales and the participant's data on other measures were complete and valid, the participant's data were retained for analyses involving other constructs. Consequently, this case was excluded only from analyses specifically involving PSS, CD-RISC and FFMQ. For all other analyses, the sample size remains N = 14. At the item level, missing data were handled with mean imputation.

3. Results

Paired-samples T-tests were conducted to evaluate changes in self-reported scores before and after the intervention. Mean differences, standard deviations, t, p-values and effect sizes of change (measured by Cohen's d) for total scores and factor scores are presented in Table 3.

Table 3. Results of paired-t tests and effect size

Measure	df	Paired difference (± SD)	t	p	Cohen's d
Beck Anxiety Inventory (BAI)	13	-2.18 ± 4.99	-1.63	0.06	-0.44

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Table 3. (continued)

Children's Depression Inventory (CDI)	13				
Negative mood		-0.03 ± 1.97	-0.05	0.48	-0.01
Anhedonia		0.19 ± 2.46	0.29	0.39	0.08
Negative self-esteem		0.43 ± 1.60	1.00	0.17	0.27
Ineffectiveness		0.24 ± 1.00	0.89	0.19	0.24
Interpersonal problem		0.19 ± 1.22	0.59	0.28	0.16
Perceived Stress Scale (PSS)	12				
Perceived Distress		0.00 ± 4.26	0.00	0.50	0.00
Perceived Coping		3.46 ± 7.49	1.67	0.06	0.46
Total		3.46 ± 8.84	1.41	0.09	0.39
Connor-Davidson Resilience Scale (CD-RISC)	12	2.20 ± 9.81	0.81	0.22	0.22
Five Facets Mindfulness Questionnaire (FFMQ)	12				
Observe		5.54 ± 8.94	2.23	*0.02	0.62
Non-react		4.70 ± 6.82	2.48	*0.01	0.69
Act with awareness		-1.53 ± 6.06	-0.91	0.19	-0.25
Describe		-1.68 ± 6.7	-0.90	0.19	-0.25
Non-judge		-3.12 ± 8.03	-1.40	0.09	-0.39
Total (mindfulness level)		3.90 ± 14.86	0.95	0.18	0.26
Profile of Mood States (POMS)	13				
Tension-Anxiety		-0.64 ± 1.08	-2.22	*0.02	-0.59
Anger-Hostility		0.64 ± 3.39	0.71	0.25	0.19
Fatigue		-1.82 ± 2.70	-2.52	*0.01	-0.67
Depression		-0.29 ± 1.43	-0.74	0.24	-0.20
Vigor-Activity		-0.44 ± 2.64	-0.63	0.27	-0.17
Self-related emotion		0.00 ± 0.78	0.00	0.50	0.00
Confusion-Bewilderment		-0.92 ± 2.37	-1.47	0.08	-0.39
Total (total mood disturbances)		-2.59 ± 8.80	-1.10	0.15	-0.29

Note: *$p < 0.05$.

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4. Discussion

The results showed a general decrease in anxiety levels, total mood disturbance, and several subscales of mood (tension-anxiety, fatigue, depression, and confusion-bewilderment), with significant reductions in tension and fatigue. Improvements were also observed in psychological resources, including mental resilience and overall mindfulness, with significant increases in the "observe" and "non-react" subscales of the FFMQ. However, unexpected increases were observed across the two subscales of PSS and in multiple dimensions of the CDI, suggesting heightened perceived stress and depressive symptoms. These findings should be interpreted with caution, given the small sample size.

Majority of the results align with the original hypothesis, which means after the group therapy, there were improvements in general mental states, highlighted by decreased anxiety and fatigue, together with enhanced mindfulness skills and mental resilience. This means the results generally supported effectiveness of the intervention. In the book Mindfulness-based Cognitive Therapy for Depression, the authors suggested that mindfulness promotes an attitude of focusing on the present, or the "being-mode", instead of being in a goal-oriented "driven-doing mode". In the doing mode, the mind focuses on what we want things to be (goals) and tries to close the gap between the goal and the reality, ignoring the present [21]. Therefore, the attitude of being in the present may have served a crucial part in reducing anxiety levels in adolescents. By teaching group members skills to help focus on the present, they ruminate less about future goals or past events, thus reduce anxiety and depression. Yet the unexpected rise in perceived stress (PSS) and depressive symptoms (CDI) revealed potential problems of this program. That doesn't mean the program failed. A possible explanation is related to the role of the "observe" facet of mindfulness in FFMQ. Observing is the ability to notice one's surrounding environments as well as their inner thoughts and feelings. Adolescents experienced significant improvement in this area after intervention. Previous research has noted that greater observational awareness may sometimes intensify the experience of negative emotions, especially when lack of sufficient acceptance or compassion skills [22]. In this program, participants may have become more aware of their own internal states, including uncomfortable emotions, but did not have enough tools or training to process these experiences constructively, which in turn increased self-reported distress. This interpretation points to direction for refining the program. Specifically, the curriculum might help adolescents more if it emphasized acceptance-based practices and exercises like loving-kindness or self-compassion. Future versions could improve by balancing observational skills with cultivation of acceptance and kindness toward oneself. In that way there may be lower risk of worsening symptoms, and the program could be more supportive for adolescents.

We see preliminary support for a short-term, fusion-style MBCT program here, though the evidence is far from conclusive. Several limitations of this study should be noted. The sample size limits statistical power and generalizability. We also didn't include a randomized control group, so it is difficult to attribute observed changes to the intervention, rather than to nonspecific factors, such as time, group support, or placebo effects. A randomized controlled trial (RCT) would provide stronger evidence for effectiveness. Another issue was the timing of assessments. Due to practical constraints, we collected the post-test measures right before the final session, instead of immediately afterward. That may have affected the accuracy of outcomes, particularly for participants who benefited from the last session's content. And data were collected in real clinical setting, so we could not control participants for medication. This could confound the results, making it unclear whether the improvements were results of the group therapy or pharmacological treatment.

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Future studies need to recruit larger, more diverse samples to enhance generalizability. We should also fix the assessment timing (post-test delivered after the last session instead of before) and add multiple follow-up tests to explore long-term effects. Medication could be controlled as a variable to clarify treatment effects. If we address these limitations, future research would be more reliable and valid. Comparative studies such as RCTs are also crucial to clarify the relative benefits of this short-term format. It is especially important to compare it with standard long-term MBCT for teenagers. This may help determine the trade-offs between accessibility and therapeutic effects. It is also worth comparing outcomes with other short-term group interventions, such as CBT-based programs, to see whether the effects are specific to MBIs. And finally, comparison with online mindfulness-based courses may provide some insight into the effect of delivery mode.

5. Conclusion

A one-week intensive mindfulness program might work as an alternative for Chinese adolescents compared to standard protocols. Results supported its effectiveness in reducing tension and fatigue, as well as improving resilience and specific mindfulness facets. But its accessibility and positive effects came with a cost. The rise in perceived stress and depressive symptoms noted earlier highlights a critical consideration regarding treatment design.

This study suggests that, for short-term interventions, enhancing emotional awareness without enough internal resources or preparation may temporarily increase distress in teenagers. Therefore, future refinements should prioritize psychoeducation or skills on acceptance and self-compassion to make the intervention safer and more balanced. The study has clear limitations. Still, it shows the potential of condensed psychological interventions in improving mental health accessibility, though we need future RCTs with larger sample sizes and better designs to validate that.

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