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The Effectiveness of Mindfulness-Based Cognitive Therapy in Reducing Mind Wandering, Improving Emotional Regulation, and Enhancing Distress Tolerance in Adults with Attention-Deficit/Hyperactivity Disorder

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Given the widespread consequences of Attention Deficit/Hyperactivity Disorder (ADHD) in adults and the limitations of conventional treatments, the present study aimed to examine the effectiveness of Mindfulness-Based Cognitive Therapy (MBCT) in reducing mind-wandering, improving emotion regulation, and increasing distress tolerance among adults with ADHD. This applied research utilized a quasi-experimental design with a control group and pretest–pretest–posttest. The statistical population consisted of adults diagnosed with ADHD who visited counseling centers in Tehran in 2025. The sample included 30 participants selected through convenience sampling and randomly assigned to the experimental group (15 participants) and control group (15 participants). Research instruments included the Mind-Wandering Questionnaire (MWQ), the Cognitive Emotion Regulation Questionnaire (CERQ), the Distress Tolerance Scale (DTS), and the Barkley Adult ADHD Rating Scale (BAARS). The experimental

group attended eight 90-minute MBCT sessions based on Segal, Williams, and Teasdale's (2002) protocol and the modified version by Zylowska et al. (2008), while the control group remained on a waiting list and received no intervention. Data were analyzed in SPSS version 26 using descriptive statistics (mean and standard deviation) and inferential statistics (multivariate analysis of covariance). The results indicate that MBCT significantly reduced mind-wandering, improved emotion regulation, and increased distress tolerance in adults with ADHD. These findings highlight the efficacy of MBCT as a complementary approach in managing the symptoms of this disorder. Therefore, MBCT can enhance the emotional and cognitive functioning of this population.

Keywords: mindfulness-based cognitive therapy, mind wandering, emotional regulation, distress tolerance, ADHD.

Attention-Deficit/Hyperactivity Disorder (ADHD) is one of the most common neurodevelopmental disorders of childhood, typically identified during the early school years and often persisting into adulthood (American Psychiatric Association, 2013). This disorder is characterized by core symptoms of hyperactivity, inattention, and impulsivity, which lead to significant difficulties in cognitive, emotional, and behavioral domains (Francis et al., 2022). Beyond childhood, adults with ADHD also face extensive challenges across cognitive, behavioral, and emotional areas that substantially affect their personal, social, occupational, and academic functioning (Lopez et al., 2018; Yousefi, Soltani, & Teymouri, 2009; Barkley, 2015). In addition to psychological and behavioral impacts, ADHD in adults imposes a considerable burden on healthcare, educational, and economic systems. Research has demonstrated that adults with ADHD experience reduced occupational productivity, increased absenteeism, and higher treatment costs, resulting in substantial direct and indirect economic burdens on society (Kandegar et al., 2023; Johnson et al., 2022). Therefore, a more

precise understanding of this disorder and the development of effective therapeutic interventions not only improve the quality of life for affected individuals but also alleviate the extensive social and economic burden associated with ADHD. Prominent difficulties in this population include impairments in executive functioning, challenges in emotional regulation, deficits in impulse control, and decreased stress tolerance, which often lead to diminished quality of life and increased comorbidity with disorders such as anxiety and depression (Kandegar et al., 2023). One of the most prominent challenges faced by individuals with ADHD is frequent mind-wandering and an inability to sustain consistent focus on tasks, which leads to reduced cognitive efficiency, impaired decision-making, and difficulties in performing daily activities (Lenie, Weiss, & Biderman, 2019; Franklin et al., 2014). Additionally, these individuals experience deficits in emotional regulation and often exhibit sudden and intense emotional reactions, negatively impacting their social relationships and mental health (Shaw et al., 2014). Distress tolerance, defined as the ability to confront and manage stressful situations, is typically impaired in adults with ADHD and can result in maladaptive behaviors such as aggression and substance use (Leiruo, Zulonski, & Bernstein, 2010). Moreover, these emotional and behavioral difficulties increase psychological burden and familial stress, adversely affecting the quality of life for both the individual and their family (Kamal et al., 2013; Weiner et al., 2016).

ADHD presents widespread negative consequences not only in childhood but also in adulthood, manifesting primarily in three domains: cognitive, behavioral, and emotional (Luo et al., 2019). Despite numerous advances in the understanding and treatment

of this disorder, many adults with ADHD continue to face serious challenges such as mind-wandering, poor emotional control, and reduced distress tolerance (Marcus et al., 2022; Johnson et al., 2023). Given the limitations of pharmacological treatments, including potential side effects and adherence difficulties, there has been increased attention to non-pharmacological psychological interventions, such as cognitive-behavioral therapy (CBT) and mindfulness-based interventions (Miller, 2021). CBT is recognized as an effective method for alleviating ADHD symptoms by teaching cognitive and behavioral strategies that help individuals develop coping skills and enhance emotional functioning (Lopez et al., 2018).

In recent years, Mindfulness-Based Cognitive Therapy (MBCT) has emerged as an innovative and integrative approach to psychological disorders, combining principles of cognitive-behavioral therapy (CBT) with mindfulness practices (Andrews et al., 2021; Zylowska, 2008). This approach emphasizes moment-to-moment, non-judgmental awareness of thoughts, emotions, and bodily experiences, helping individuals enhance skills such as attention regulation, emotional control, and resilience to stress (Oliva et al., 2021). Unlike traditional CBT, which primarily focuses on identifying and modifying negative thought content and maladaptive behavioral patterns, MBCT emphasizes cultivating mindful awareness and accepting internal experiences without judgment. In this framework, individuals learn to distance themselves from their thoughts, thereby preventing entrapment in negative cycles and intense emotional reactions, and instead direct their attention to the present moment (Segal, Williams, & Teasdale, 2002; Kabat-Zinn, 1990). Practices such as meditation, breath focus, and non-judgmental observation

of thoughts and feelings contribute to improved psychological resilience and emotional regulation (Teasdale et al., 2000).

In contrast, classical cognitive-behavioral therapy primarily targets modifying cognitions and dysfunctional beliefs through cognitive restructuring techniques and behavioral exercises (Beck, 2011). In other words, traditional CBT aims to change the content of negative thoughts directly, whereas MBCT emphasizes acceptance and observation of these thoughts without attempting to alter them (Segal et al., 2002). This fundamental difference renders MBCT particularly effective and complementary for individuals experiencing mind-wandering, anxiety, and chronic mood disorders, including adults with Attention-Deficit/Hyperactivity Disorder (ADHD) (Hölzel et al., 2011).

Multiple studies have confirmed the efficacy of Mindfulness-Based Cognitive Therapy (MBCT) in reducing symptoms of Attention-Deficit/Hyperactivity Disorder (ADHD), improving executive functions, and controlling impulsive behaviors (Schultz et al., 2023; Kang, 2024). Mindfulness interventions, especially in adults with ADHD, play a significant role in reducing excessive rumination, mind wandering, and anxiety, which are considered exacerbating factors for this disorder (Kandegar et al., 2023). These interventions, by enhancing selective attention skills, increasing self-compassion, and fostering a compassionate attitude toward oneself, can contribute to improved mental health and reduced severity of ADHD symptoms (Gurtz et al., 2020, 2021).

Previous research has consistently supported the positive and effective role of mindfulness-based interventions in improving symptoms of ADHD. Specifically, structured and coherent training programs such as Mindfulness Awareness Practices

(MAP) and MBCT, which integrate cognitive-behavioral therapy principles with mindfulness exercises, have been shown to significantly reduce ADHD symptoms, improve executive functions, and increase emotional distress tolerance (Murray et al., 2025; Oliva et al., 2021). Furthermore, active patient involvement in the design and implementation of these interventions has been identified as a key factor in treatment success, leading to increased motivation, adherence to therapeutic programs, and enhanced quality of intervention delivery (Murray et al., 2025).

A notable point highlighted in recent studies is the active participation of patients in the design, development, and execution of these interventions; this participation leads to greater motivation and adherence to treatment programs and substantially improves the quality of intervention delivery (Murray et al., 2025). This finding indicates that mindfulness interventions are not merely passive treatment methods but rather dynamic, interactive processes that require active individual collaboration.

In the domain of executive functioning, one of the most impaired areas in individuals with ADHD, Kang (2024) and Gurtz et al. (2020, 2021) have thoroughly examined the role of mindfulness interventions. Their research demonstrated that improving emotional regulation skills and increasing self-compassion can act as key mediating pathways in reducing ADHD symptom severity. Specifically, MBCT interventions that focus on non-judgmental acceptance of emotions help individuals break free from negative thought cycles and maladaptive emotional reactions, leading to sustained improvements in emotional control and attention (Gurtz et al., 2020). This approach, through techniques such as breath-focused attention,

non-reactive observation of thoughts, and creating cognitive distance from emotions and thoughts, facilitates improvements in cognitive and behavioral functioning.

From a biological and cognitive perspective, Bayesian brain models proposed by Mangali and Iglesias (2020) provide an important theoretical framework for understanding MBCT's mechanisms of action. According to these models, MBCT modifies brain predictive processing and reduces cognitive reactivity, thereby decreasing maladaptive emotional responses and enhancing the state of "being" in the moment. In other words, this therapy corrects prediction error processes in the brain, enabling individuals with ADHD to be less entangled in unnecessary emotional reactions and to maintain their attention more purposefully and persistently. This approach allows a deeper understanding of mindfulness's role in altering neural structures and cognitive functions.

Empirical evidence also indicates that combining MBCT with other pharmacological and psychological treatments can enhance therapeutic efficacy and ensure long-term improvement outcomes (Miller, 2021; Johnson et al., 2019). Johnson et al. (2019), for example, found that integrating MBCT with Treatment As Usual (TAU) led to significant improvements in ADHD symptoms, mindfulness skills, self-compassion, and positive mental health, with these benefits maintained at a 6-month follow-up. These findings underscore the importance of integrated therapeutic approaches and suggest that MBCT, alone or combined with other treatments, can be highly effective in better managing ADHD in adults.

Broader and systematic reviews also demonstrate that MBCT can be an effective complementary approach for improving

various psychological indices and cognitive functions in individuals with ADHD (Mitchell et al., 2022; Lopez et al., 2018). Such interventions can substantially reduce mind wandering, a core characteristic of ADHD, enhance emotional regulation, improve selective attention, and increase distress tolerance, all of which contribute to a better quality of life and daily functioning.

Moreover, recent studies have highlighted the mediating role of behavioral inhibition, self-compassion, and a compassionate attitude toward oneself in the therapeutic process (Gurtz et al., 2020; Kandegar et al., 2023). These factors, in addition to directly reducing symptoms, promote positive mental health and decrease comorbid depression and anxiety associated with ADHD. This underscores the importance of addressing psychological and emotional aspects in treating this disorder, showing that mindfulness-based therapies extend beyond symptom reduction to improve overall mental well-being.

However, most previous studies in this area have primarily focused on children and adolescents, with limited research examining the efficacy of Mindfulness-Based Cognitive Therapy (MBCT) in adults diagnosed with ADHD. Furthermore, key variables such as mind wandering, improvements in emotional regulation, and enhanced distress tolerance have received comparatively less attention in this population. Therefore, the present study aims to address these research gaps by investigating the effectiveness of MBCT in adult individuals with ADHD.

Given the extensive theoretical foundations and empirical evidence, there is a pressing need for further research, especially within diverse cultural contexts, to evaluate the efficacy of such interventions in adults with ADHD. These studies could provide a more precise understanding of the underlying mechanisms of

treatment effects and pave the way for optimizing intervention programs and developing more effective and efficient therapeutic approaches.

Based on the existing research literature, the present study aimed to investigate the effectiveness of Mindfulness-Based Cognitive Therapy (MBCT) in reducing *mind wandering*, improving *emotional regulation*, and enhancing *distress tolerance* among adults with Attention-Deficit/Hyperactivity Disorder (ADHD).

Method

The present study utilized a quasi-experimental design with a pretest–posttest control group. The statistical population included adults diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD) who visited counseling centers in Tehran in 2025 (1404 in the Persian calendar). A total of 30 participants were selected via convenience sampling and randomly assigned to the experimental group ($n = 15$) and the control group ($n = 15$). The sample size was calculated using G*Power, with an effect size of .36, an alpha level of .05, and a statistical power of 0.95. Inclusion criteria were: formal ADHD diagnosis based on DSM-5 by a psychologist or psychiatrist, age between 25 and 40 years, a minimum score of 24 on the ASRS-v1.1 self-report questionnaire, no similar treatment in the past six months, at least a high school diploma, regular attendance in sessions, informed consent, no substance abuse, and absence of severe psychiatric disorders. Exclusion criteria included missing more than 2 sessions, incomplete questionnaires, withdrawal from the study, non-compliance with intervention exercises, and concurrent participation in other counseling or psychotherapy programs. Following participant selection based on inclusion criteria, the

required questionnaires were administered. The Mindfulness-Based Cognitive Therapy (MBCT) intervention was conducted at a counseling center in Tehran equipped with suitable space, facilities, and educational equipment. All participants completed the questionnaires in groups at both the pretest and posttest stages without time limits. The intervention consisted of eight weekly 90-minute group sessions. Ethical considerations included confidentiality of collected information, obtaining informed consent, non-disclosure of participant data to third parties, ensuring participants could contact the researcher during all phases of the study, provision of psychological support and referral to specialized services if needed, creating a safe environment for expressing concerns, questions, or issues, addressing the requests of participants and their families appropriately, and upholding fairness, respect, and human dignity. For the control group, the therapeutic program was delivered intensively at the conclusion of the study (two sessions per week). Data were analyzed using Multivariate Analysis of Covariance (MANCOVA) with SPSS version 26.

Instruments

Mind Wandering Questionnaire (MWQ)

In this study, the Mind Wandering Questionnaire (MWQ) developed by Moulton et al. (2016) was used to assess mind wandering. This self-report instrument consists of 12 items that measure the frequency and intensity of mind wandering, using a five-point Likert scale ranging from 1 (never) to 5 (always). The MWQ evaluates characteristics such as rapid shifts of attention between topics and inward focus on thoughts, which are highly prevalent among adults with ADHD. The original version reported construct validity of .79 and Cronbach's alpha reliability

of .93. The Persian version was translated and standardized by Narimani et al. (2020), with a Cronbach's alpha of .70, indicating acceptable reliability for clinical and research applications. Construct validity was confirmed through factor analysis, and convergent validity was demonstrated via significant correlations with the Adult ADHD Self-Report Scale (ASRS) (Narimani et al., 2020).

Cognitive Emotion Regulation Questionnaire (CERQ)

The Cognitive Emotion Regulation Questionnaire (CERQ), developed by Garnefski, Kraaij, and Spinhoven in the Netherlands, was used to measure emotion regulation strategies. This 32-item questionnaire includes nine subscales that assess cognitive coping mechanisms used following negative events. Garnefski et al. (2006) reported construct validity of .72 and reliability using Cronbach's alpha and two-week test-retest methods of .85 and 0.81, respectively. The Persian version, standardized by Hassani (2011), showed good internal consistency, with Cronbach's alpha coefficients ranging from .76 to .92 across subscales. Test-retest reliability ranged from .51 to .77, indicating satisfactory temporal stability. Confirmatory factor analysis supported the multidimensional structure, and both convergent and discriminant validity were established. The CERQ has been widely used in clinical and non-clinical populations, with significant correlations with psychological disorders such as depression and anxiety (Hassani, 2011; Garnefski et al., 2001).

Distress Tolerance Scale (DTS)

The Distress Tolerance Scale (DTS), developed by Simons and Gaher (2005), is a 15-item self-report measure designed to

assess an individual's ability to withstand psychological and emotional distress. Responses are rated on a five-point Likert scale, with higher scores indicating greater distress tolerance. The scale evaluates four dimensions: tolerance, appraisal, absorption, and regulation. Simons et al. (2005) reported Cronbach's alpha reliability of 0.94 for this measure. The DTS also demonstrated significant correlations with the Worry Questionnaire ($r = .60$), Beck Depression Inventory ($r = .59$), and Beck Anxiety Inventory ($r = .55$). The Persian version, validated by Azizi (2011), showed good internal consistency, with Cronbach's alpha coefficients ranging from .73 to .84. Confirmatory factor analysis supported the four-factor structure. International studies have confirmed strong external validity, with low distress tolerance linked to psychological disorders such as depression, anxiety, suicidal ideation, and risky behaviors (Azizi, 2011; Simons & Gaher, 2005).

Barkley Adult ADHD Rating Scale (BAARS)

To assess ADHD symptom severity in adults, the Barkley Adult ADHD Rating Scale (BAARS), developed by Russell Barkley (2006), was used. This standardized self-report instrument includes three subscales assessing inattention, hyperactivity/impulsivity, and sluggish cognitive tempo. Items are scored on a four- or five-point Likert scale, with higher scores indicating greater symptom severity. Initial studies reported excellent internal consistency, with Cronbach's alpha of .91 for the total scale and coefficients ranging from .77 to .90 for subscales. The original version reported satisfactory face and content validity ($CVR = .841$). The Persian version, translated and standardized by Mahdizadeh et al. (2015), reported a Cronbach's alpha of .78. Construct validity and convergent

validity were confirmed through significant correlations with the ASRS (Mahdizadeh et al., 2015).

Mindfulness-Based Cognitive Therapy (MBCT)

Mindfulness-Based Cognitive Therapy (MBCT) was developed by Segal, Williams, and Teasdale (Zein, Williams, & Teasdale, 2002). This therapeutic protocol was originally designed to prevent the recurrence of major depressive disorder and was first formally published in 2002. Additionally, Zalewska and colleagues (Zalewska et al., 2008) applied this protocol to adults with ADHD and examined its efficacy.

Session Number	Session Content	Meditation Exercises	Training Focus	Homework Assignments
1	Introduction and Orientation	Body scan	Purpose of attending the sessions	- Body scan - Mindful eating - Mindful daily activities - Raisin exercise
2	Facing Obstacles	Body scan	Practice of "Walking in the Street" observation Mindful breathing	- Body scan or mindful breathing - Recalling positive memories - Mindful awareness of daily activities
3	Awareness of Breath	Lying down movement exercises Body and breath awareness	3-minute breathing space	- Body scan or movement exercises - Recalling negative memories - 3-minute breathing exercises, 3 times a day
4	Being Present in the Moment	Sitting meditation Walking meditation	Psychoeducation on "Stress Response"	- Walking or sitting meditation or movement exercises - Stressful memory recall - 3-minute breathing

5	Allowing	Sitting meditation Walking meditation	Psychoeducation on help or lack of help and thoughts related to anxiety, anger, and depression	- Walking meditation - Sitting meditation - Mindful communication exercises - 3-minute breathing
6	Mindful Communication	Standing movement exercises 3-minute breathing during stress	Psychoeducation on "Communication" Verbal and nonverbal communication exercises	- Walking meditation - Sitting meditation, body scan or movement exercises - 3-minute breathing - Sitting meditation
7	Self-Care	Sitting meditation and open awareness 3-minute breathing space	Energy balance and relapse prevention	- Willpower mental exercise - Relapse prevention plan - 3-minute breathing
8	From Stress to Inner Strength	Body scan	Training on evaluation and looking forward	—

Result

The total sample size was set at 30 participants. Descriptive findings indicated that the mean age of participants in the experimental group was 41.5 ± 3.97 , while the control group had a mean age of 39.9 ± 3.38 . In the experimental group, 7 participants (46.7%) were female, and 8 participants (53.3%) were male. In contrast, the control group included 9 females (60%) and 6 males (40%). Regarding education level, in the experimental group, 8 participants (57%) had university education, and 7 participants (43%) had non-university education. In the control group, 6 participants (40%) had university education, while 9 participants (60%) reported non-university education. Table 2 presents descriptive statistics for participants'

scores on *emotion regulation*, *mind wandering*, and *distress tolerance*.

Table 2
Descriptive Statistics for Participants' Scores in Emotion Regulation, Mind Wandering, and Distress Tolerance

Variable	Group	Pre-test (Mean ± SD)	Post-test (Mean ± SD)
Emotion Regulation	Experimental	33.2 ± 5.91	43.2 ± 7.41
	Control	34.7 ± 6.68	35.06 ± 6.73
Mind Wandering	Experimental	18.6 ± 2.44	14.1 ± 1.45
	Control	19.4 ± 2.64	18.3 ± 2.59
Distress Tolerance	Experimental	20.7 ± 1.44	15.3 ± 1.77
	Control	19.5 ± 1.69	18.9 ± 1.59

As shown in Table 2, the results indicate changes in the means and standard deviations of the experimental and control groups in the posttest stage. To examine these changes, a Multivariate Analysis of Covariance (MANCOVA) was conducted. One of the assumptions of MANCOVA, the homogeneity of variances, was tested using Levene's Test. Results showed that the variances of emotion regulation, mind wandering, and distress tolerance were not statistically significant, meaning that both groups were homogeneous in terms of variance before intervention ($p > .05$). Another assumption, the normal distribution of the data, was tested using the Shapiro–Wilk Test. The findings indicated that emotion regulation, mind wandering, and distress tolerance met the assumption of normality ($p > .05$). For the third assumption, equality of variance-covariance matrices — the Box's M Test yielded $p = .16$ and $F(10, 28) = 1.89$, showing equality between the variance-covariance matrices. Finally, to assess the homogeneity of regression slopes, the interaction between

condition and pretest scores was examined. The result was non-significant ($p = .36$, $F = 1.99$), supporting the assumption of homogeneity of regression slopes. Given that all assumptions for MANCOVA were met, the analysis was carried out. Table 3 presents the results.

Table 3
Results of Multivariate Analysis of Covariance on Post-Test Means Controlling for Pre-Test Scores

Test Name	Value	F	Sig. (p)	Effect Size	Power
Pillai's Trace	.544	13.712	.001	.544	.997
Wilks' Lambda	.456	13.712	.001	.544	.997
Hotelling's Trace	1.291	13.712	.001	.544	.997
Roy's Largest Root	1.291	13.712	.001	.544	.997

Table 3 shows that there is a statistically significant difference between the experimental and control groups in the posttest scores of the dependent variables, after controlling for pre-test scores ($p < .05$). The effect size was 54%, indicating a significant effect of the experimental intervention on the groups. To further assess differences across variables, univariate ANCOVA tests were performed. Results are shown in Table 4.

Table 4
Results of Univariate Analysis of Covariance

Source	Variable	Sum of Squares	df	F	p	Effect Size	Statistical Power
Pre-test	Emotion	.107	1	.031	.861	.005	.115
	Regulation						
	Mind	.038	1	.079	.782	.025	.167
	Wandering						
	Distress	.625	1	.181	.674	.029	.219
	Tolerance						

Group	Emotion	2.21	1	6.39	.030	.390	1.000
	Regulation						
	Mind	7.63	1	10.3	.009	.509	.977
	Wandering						
	Distress	3.64	1	7.34	.022	.423	.890
	Tolerance						
Error	Emotion	2.85	25				
	Regulation						
	Mind	.005	25				
	Wandering						
	Distress	1.64	25				
	Tolerance						

-test scores of emotion regulation ($F = 6.39$, $p = .001$), mind wandering ($F = 10.3$, $p = .001$), and distress tolerance ($F = 7.34$, $p = .001$), all of which are significant at the level of $p < .05$, indicating the research hypothesis is confirmed. This indicates that the intervention had a statistically significant effect on improving emotion regulation, reducing mind wandering, and lowering distress tolerance scores in the experimental group compared to the control group.

Discussion

This study aimed to evaluate the effectiveness of MBCT in reducing mind wandering, improving emotional control, and increasing distress tolerance in adults with ADHD. The results indicate that MBCT significantly decreased mind wandering, enhanced attentional focus and present-moment awareness, improved emotional control, and increased resilience in response to stress and psychological challenges. These findings demonstrate the positive and lasting effects of MBCT on cognitive and emotional functioning.

Furthermore, the benefits of MBCT were sustained during follow-up assessments, underscoring the importance of mindfulness and self-compassion training in improving the

quality of life of adults with ADHD. Improvements in emotional control, mood stability, distress tolerance, and attention are consistent with prior research (e.g., Poizen et al., 2019; Hepark et al., 2019; Schultz et al., 2023; Kang, 2024; Gortz et al., 2021; Heydarian & Visani, 2021; Jafari Roshan et al., 2018; Zabihollahzadeh et al., 2019; Bashirpour & Hasani Jabarighi, 2020).

A key distinction of this study is the cultural adaptation of the MBCT protocol and its implementation in Iranian adults with ADHD, which may support broader clinical applications across different cultural contexts.

Nevertheless, limitations include a small sample size, recruitment from a single geographic region, and a short follow-up period, which may limit the generalizability of the findings. Partial control over confounding factors such as socioeconomic status, social support, and psychiatric medication use was also a limitation. Future research should employ larger, more diverse samples, longer follow-up periods, and more comprehensive assessments of potential influencing factors to strengthen the validity and generalizability of the results.

The findings of this study demonstrate the significant efficacy of MBCT in improving cognitive and emotional functioning in adults with attention-deficit/hyperactivity disorder (ADHD). Significant reductions in mind wandering, improvements in emotional control, and increases in distress tolerance—the three key variables of the study—reflect positive changes in behavioral and neurocognitive processes associated with attention and emotion regulation.

From a theoretical perspective, mind wandering is a key indicator of reduced attentional efficiency in ADHD.

Characterized by distractibility and persistent lapses in focus, it impairs executive functioning. MBCT, by fostering present-moment awareness and strengthening selective attention, enhances attentional mechanisms and prevents mental distractions. These findings are consistent with cognitive models of ADHD that emphasize deficits in attention and emotion regulation as central to the disorder.

The second key finding concerns improvements in emotional control. ADHD is associated with emotion regulation difficulties and heightened emotional reactivity. MBCT, through training in emotion regulation skills—particularly focusing on acceptance of emotions and reducing automatic emotional reactions—enhances inhibitory control and adaptive management of emotional responses. Improved emotional control may reduce impulsive and unstable behaviors often observed in adults with ADHD.

The third outcome, increased distress tolerance, reflects enhanced emotional resilience. Mindfulness-based interventions promote acceptance of unpleasant emotional experiences without avoidance or suppression, thereby improving the ability to cope with environmental stressors. Clinically, this is highly relevant for adults with ADHD who experience heightened cognitive and behavioral stress.

Observed effect sizes (η^2 between 0.15 and 0.22) indicate moderate to strong efficacy of MBCT, confirming its clinical significance. In psychological interventions, effect size is often more informative than statistical significance alone, highlighting the practical utility of the treatment in clinical settings.

Compared with previous research, our findings align with those of Poizen et al. (2019), Hepark et al. (2019), and Gortz et al. (2021). The novelty of this study lies in the cultural adaptation

of the MBCT treatment protocol for Iranian adults, which may improve its generalizability and clinical applicability in non-Western populations. Cultural considerations are important because differences in cognitive styles and emotional processing can influence the acceptance and effectiveness of mindfulness interventions.

Overall, this study emphasizes the clinical importance of mindfulness skill training for adults with ADHD. MBCT can improve core ADHD symptoms, enhance quality of life, and improve daily functioning. These findings support the development of comprehensive, multi-component treatment programs that combine cognitive-behavioral therapy, pharmacotherapy, and mindfulness-based interventions.

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