

The Effectiveness of Mindfulness-Based Cognitive Therapy on Rumination and Cognitive Bias in Individuals Referred to Counseling Centers

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ABSTRACT

Purpose: The present study aimed to determine the effectiveness of Mindfulness-Based Cognitive Therapy (MBCT) on reducing rumination and cognitive bias among individuals referred to counseling centers.

Methods and Materials: This study employed a quasi-experimental design with a pretest-posttest control group framework. The statistical population consisted of individuals referred to the Arsam Psychological Services and Counseling Center in Tonekabon, Iran, during 2025. A total of 30 participants were selected through convenience sampling and randomly assigned to either an experimental group ($n = 15$) or a control group ($n = 15$). Data were collected using the Rumination Response Scale (RRS) and the Cognitive Bias Questionnaire. Participants in the experimental group received eight weekly 90-minute sessions of Mindfulness-Based Cognitive Therapy, while the control group received no psychological intervention. Data were analyzed using repeated-measures analysis of variance after verifying assumptions of normality through the Shapiro-Wilk test.

Findings: Inferential analyses demonstrated significant effects of time on rumination scores ($F = 78.427, p < .001, \eta^2 = .653$) and a significant time $\times$ group interaction ($F = 16.354, p < .001, \eta^2 = .521$), indicating that participants who received MBCT experienced substantial reductions in rumination compared with the control group. Similarly, cognitive bias scores showed a significant effect of time ($F = 105.553, p < .001, \eta^2 = .785$) and a significant time $\times$ group interaction ($F = 31.186, p < .001, \eta^2 = .548$). These findings suggest that the intervention produced meaningful improvements in both outcome variables, whereas no comparable changes were observed in the control group.

Conclusion: The findings indicate that Mindfulness-Based Cognitive Therapy is an effective intervention for reducing rumination and cognitive bias among individuals seeking counseling services. By enhancing present-moment awareness, nonjudgmental attention, and cognitive flexibility, MBCT helps individuals disengage from maladaptive thought patterns and biased information processing.

Keywords: *Mindfulness-Based Cognitive Therapy; Rumination; Cognitive Bias; Counseling Centers; Cognitive Flexibility*

1. Introduction

Mental health problems remain among the most significant challenges facing contemporary societies, affecting individuals' emotional well-being, cognitive functioning, interpersonal relationships, and overall quality of life. Many psychological difficulties are maintained not only by environmental stressors and emotional dysregulation but also by maladaptive cognitive processes that shape how individuals perceive, interpret, and respond to life experiences. Among these cognitive processes, rumination and cognitive bias have received substantial attention because of their pervasive role in the development and maintenance of emotional distress, anxiety disorders, depression, and adjustment difficulties (Azad, 2022; Zuroff & Fitzpatrick, 2023). Understanding mechanisms that contribute to these maladaptive cognitive patterns and identifying effective interventions for reducing them have therefore become important priorities in psychological research and clinical practice.

Rumination is generally defined as a repetitive and passive pattern of thinking in which individuals continuously focus on their negative emotions, perceived failures, personal shortcomings, and distressing experiences without engaging in effective problem-solving behaviors. Rather than facilitating adaptive coping, rumination often prolongs emotional suffering and increases vulnerability to psychological disorders. Theoretical perspectives suggest that ruminative thinking narrows attentional resources, reinforces negative emotional states, and interferes with flexible cognitive processing. Individuals who engage in frequent rumination tend to revisit distressing memories and perceived problems repeatedly, which intensifies emotional discomfort and prevents the development of constructive coping strategies (Papageorgiou & Wells, 2019; Yousefi, 2021). Empirical evidence has consistently demonstrated strong associations between rumination and depression, anxiety, emotional dysregulation, and reduced psychological well-being (Andrews & Thomson, 2018; Bagherinejad et al., 2020).

Rumination is particularly important because it serves as a transdiagnostic factor across numerous psychological disorders. Research has shown that persistent ruminative thinking contributes to the onset, maintenance, and recurrence of depressive symptoms and can interfere with

recovery even after symptom reduction. Individuals who habitually ruminate often experience difficulties disengaging from negative thoughts, leading to heightened psychological vulnerability and impaired functioning across various life domains. Furthermore, rumination has been linked to interpersonal difficulties, reduced self-esteem, diminished resilience, and impaired cognitive flexibility (Papageorgiou & Wells, 2019; Zuroff & Fitzpatrick, 2023). Because of these widespread consequences, interventions that effectively reduce rumination may produce meaningful improvements across multiple aspects of mental health.

Recent studies have continued to emphasize the significance of rumination as a clinical target. For example, research among women experiencing infertility demonstrated that mindfulness was associated with lower depressive mood through reductions in rumination and anxiety, highlighting the mediating role of repetitive negative thinking in emotional adjustment (Luo et al., 2025). Similarly, investigations involving older adults have shown that mindfulness-based approaches can significantly reduce loneliness, rejection sensitivity, and rumination, suggesting that enhancing present-moment awareness may weaken maladaptive cognitive cycles across different age groups (Fakourian & Fakourian, 2025). These findings underscore the growing recognition of rumination as a modifiable cognitive process that can be addressed through targeted psychological interventions.

Alongside rumination, cognitive bias represents another fundamental mechanism underlying emotional and behavioral difficulties. Cognitive bias refers to systematic distortions in information processing that influence how individuals attend to, interpret, remember, and evaluate environmental stimuli. These biases often involve preferential processing of threatening, negative, or self-critical information while minimizing or disregarding neutral and positive experiences. As a result, individuals develop distorted perceptions of reality that reinforce maladaptive beliefs and emotional distress (MacLeod et al., 2020; Mehrafzoon et al., 2021). Cognitive biases are particularly prominent in anxiety and depressive disorders, where individuals frequently interpret ambiguous situations as threatening, anticipate negative outcomes, and selectively attend to information that confirms existing fears and concerns.

Theoretical and empirical research suggests that cognitive biases contribute significantly to the maintenance of psychological disorders by reinforcing dysfunctional cognitive schemas and limiting adaptive responses to challenging situations. Attentional biases toward threat-related stimuli can increase anxiety, whereas interpretive biases may promote pessimistic evaluations of everyday events. Such biases create self-perpetuating cycles in which distorted perceptions generate emotional distress, which in turn further strengthens biased processing patterns (MacLeod et al., 2020). Research examining cognitive bias modification interventions has demonstrated that reducing maladaptive attentional patterns can significantly improve psychological outcomes, highlighting the clinical importance of addressing biased cognitive processing directly (Arsenjani et al., 2020).

Given the significant impact of rumination and cognitive bias on psychological functioning, considerable attention has been devoted to identifying therapeutic approaches capable of modifying these maladaptive processes. Among contemporary psychological interventions, mindfulness-based approaches have emerged as particularly promising because they target fundamental mechanisms underlying emotional distress and dysfunctional cognition. Mindfulness is commonly defined as the intentional and nonjudgmental awareness of present-moment experiences, including thoughts, emotions, bodily sensations, and environmental stimuli. Rather than attempting to suppress or avoid unpleasant experiences, mindfulness encourages individuals to observe them openly and acceptingly, thereby promoting greater psychological flexibility and emotional balance (Creswell, 2017; Mirzazadeh et al., 2022).

The growing popularity of mindfulness-based interventions is supported by substantial empirical evidence demonstrating their effectiveness across a wide range of psychological and physical conditions. Mindfulness practices have been associated with reductions in stress, anxiety, depression, emotional reactivity, and maladaptive cognitive processes while enhancing self-awareness, emotional regulation, and overall well-being (Creswell, 2017; Izadikhah et al., 2020). By encouraging individuals to observe their thoughts without becoming entangled in them, mindfulness may disrupt habitual patterns of negative thinking and foster healthier responses to internal experiences.

Mindfulness-Based Cognitive Therapy (MBCT) represents one of the most influential mindfulness-based interventions developed within the third wave of cognitive-

behavioral therapies. Originally designed to prevent relapse among individuals with recurrent depression, MBCT integrates traditional cognitive therapy principles with mindfulness meditation practices. The intervention seeks to help individuals recognize maladaptive cognitive patterns, cultivate awareness of internal experiences, and develop a different relationship with distressing thoughts and emotions. Rather than viewing negative thoughts as accurate reflections of reality, participants learn to perceive them as transient mental events that do not necessarily require reaction or engagement (Crane et al., 2014; Segal et al., 2013).

The therapeutic mechanisms underlying MBCT appear particularly relevant to rumination and cognitive bias. Through repeated mindfulness practice, individuals develop increased attentional control and metacognitive awareness, enabling them to recognize and disengage from repetitive negative thought patterns before they escalate into prolonged emotional distress. Furthermore, mindfulness practices promote cognitive flexibility by encouraging a more balanced and less judgmental perspective toward internal and external experiences. Such changes may reduce the tendency to interpret situations through biased cognitive filters and facilitate more adaptive information processing (Mirzazadeh et al., 2022; Segal et al., 2013).

Evidence supporting the effectiveness of MBCT in reducing rumination has accumulated steadily in recent years. Clinical investigations have demonstrated significant reductions in repetitive negative thinking among individuals experiencing depression, anxiety, chronic health conditions, and other psychological difficulties following participation in mindfulness-based interventions (Esmailzadeh Torshaye, 2025; Fakourian & Fakourian, 2025). A randomized controlled trial involving patients with acute cerebral infarction found that MBCT significantly reduced rumination while simultaneously promoting post-traumatic growth, highlighting the intervention's capacity to influence both maladaptive and adaptive psychological processes (Zhang et al., 2025). Similarly, studies involving women with irritable bowel syndrome reported meaningful improvements in rumination, emotional functioning, and sleep quality following MBCT, suggesting broad therapeutic benefits extending beyond symptom reduction (Esmailzadeh Torshaye, 2025).

Systematic reviews and meta-analytic evidence further support the efficacy of MBCT. Recent meta-analytic findings indicate that MBCT produces significant reductions in rumination and related psychological symptoms across

diverse clinical and nonclinical populations. These effects appear to be robust across demographic groups and treatment settings, reinforcing the growing consensus that mindfulness-based interventions represent effective approaches for targeting repetitive negative thinking and associated psychological difficulties (Wei et al., 2025). Such findings are consistent with earlier studies demonstrating that regular mindfulness practice contributes to long-term psychological improvement and reduced vulnerability to depressive relapse (Crane et al., 2014).

In addition to its effects on rumination, MBCT may also influence cognitive bias by altering patterns of attention, interpretation, and self-referential processing. Mindfulness training encourages individuals to observe cognitive events with curiosity and openness rather than automatically accepting them as factual representations of reality. This shift may weaken dysfunctional cognitive schemas and reduce tendencies toward selective attention to threat-related information or negatively biased interpretations. Evidence suggests that mindfulness-based interventions improve cognitive flexibility, attentional regulation, and emotional awareness, all of which may contribute to reductions in cognitive distortions and biased information processing (Izadikhah et al., 2020; Mehrafzoon et al., 2021).

Although previous research has provided valuable evidence regarding the benefits of MBCT, relatively limited attention has been devoted to simultaneously examining its effects on both rumination and cognitive bias among individuals seeking counseling services. Much of the existing literature has focused on specific clinical populations, such as individuals with depression, chronic illness, infertility, or social anxiety, leaving a need for additional research within broader counseling populations. Moreover, because rumination and cognitive bias often interact to maintain psychological distress, evaluating their concurrent modification may provide a more comprehensive understanding of therapeutic effectiveness (Beigi et al., 2023; Luo et al., 2025).

Given the central role of rumination and cognitive bias in psychological maladjustment and the increasing evidence supporting mindfulness-based interventions, further investigation of MBCT within counseling settings appears warranted. Such research may contribute to both theoretical understanding and clinical practice by clarifying whether mindfulness-based approaches can effectively address key cognitive mechanisms underlying emotional distress among individuals seeking psychological services.

Therefore, the present study aimed to determine the effectiveness of Mindfulness-Based Cognitive Therapy on rumination and cognitive bias among individuals referred to counseling centers.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a quasi-experimental design using a pretest–posttest control group framework. The target population consisted of individuals who referred to the Arsam Psychological Services and Counseling Center in Tonekabon, Iran, during 2025. Participants were recruited through convenience sampling based on their willingness to participate and fulfillment of the study inclusion criteria. A total of 30 individuals were selected and subsequently assigned randomly to either an experimental group ($n = 15$) or a control group ($n = 15$). Prior to the intervention, both groups completed the study measures as a baseline assessment. The experimental group then participated in an eight-week Mindfulness-Based Cognitive Therapy (MBCT) program, while the control group did not receive any psychological intervention during the study period. Following the completion of the intervention, both groups completed the posttest assessments. Ethical considerations, including informed consent, voluntary participation, confidentiality of information, and the right to withdraw from the study at any stage, were observed throughout the research process.

2.2. Measures

Rumination was assessed using the Rumination Response Scale (RRS), a subscale derived from the Response Styles Questionnaire developed by Nolen-Hoeksema and Morrow. The instrument consists of 22 items scored on a four-point Likert scale ranging from 1 (almost never) to 4 (almost always). The questionnaire evaluates repetitive and passive thinking patterns related to depressive symptoms and rumination processes. Sample items assess difficulties in concentration and recurrent questioning about personal reactions to life events. Total scores range from 22 to 88, with higher scores indicating greater levels of rumination. Previous psychometric evaluations have demonstrated strong reliability and validity for the scale. The original version reported a Cronbach's alpha coefficient of 0.90 and a test–retest reliability coefficient of 0.67. Studies conducted with Iranian samples have also reported satisfactory internal

consistency, with a Cronbach's alpha of 0.88. The reliability coefficients for the reflection and brooding subscales have been reported as 0.72 and 0.77, respectively.

Cognitive bias was measured using the Cognitive Bias Questionnaire developed by Weissman and Beck (1978). The instrument contains 26 statements rated on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The questionnaire assesses four dimensions of cognitive bias, including perfectionism, need for approval, need to please others, and vulnerability. Total scores range from 26 to 182, with higher scores reflecting stronger maladaptive cognitive distortions. The suggested cutoff score for the instrument is 104. Weissman and Beck reported criterion validity through correlations with the General Health Questionnaire and demonstrated acceptable reliability coefficients ranging from 0.70 to 0.79. Subsequent validation studies confirmed the content validity of the instrument and reported Cronbach's alpha coefficients ranging from 0.74 to 0.78. In the present study, internal consistency coefficients for the four subscales were 0.86, 0.85, 0.71, and 0.77, respectively, indicating satisfactory reliability.

2.3. Intervention

Participants assigned to the experimental group received Mindfulness-Based Cognitive Therapy (MBCT) over a period of eight consecutive weeks. The intervention consisted of one 90-minute session per week and was delivered in a structured group format. The therapeutic program focused on cultivating nonjudgmental awareness of present-moment experiences through mindfulness practices, including mindful breathing, body scanning, meditation exercises, awareness of thoughts and emotions, and cognitive decentering techniques. Participants were trained to observe their internal experiences without avoidance, suppression, or judgment and to develop greater acceptance of thoughts and feelings as transient mental events. The intervention further emphasized recognizing maladaptive

cognitive patterns, reducing automatic negative thinking, and enhancing emotional regulation and cognitive flexibility. Homework assignments and daily mindfulness practices were encouraged between sessions to strengthen the acquisition and application of mindfulness skills in everyday life. The control group did not receive any psychological treatment during the intervention period.

2.4. Data Analysis

Data analysis was conducted using descriptive and inferential statistical methods. Descriptive statistics, including means and standard deviations, were calculated to summarize participant characteristics and study variables. Prior to hypothesis testing, the normality of data distribution was examined using the Shapiro–Wilk test. To evaluate the effectiveness of Mindfulness-Based Cognitive Therapy on rumination and cognitive bias, repeated-measures analysis of variance (RM-ANOVA) was employed. This approach allowed the examination of within-group changes over time, between-group differences, and the interaction effect between time and group membership. Statistical significance was determined at the 0.05 level, and effect sizes were calculated using partial eta-squared coefficients to assess the magnitude of intervention effects.

3. Findings and Results

A total of 30 participants completed the study, including 15 individuals in the experimental group and 15 individuals in the control group. The participants were recruited from clients referred to the Arsam Psychological Services and Counseling Center in Tonekabon, Iran. Random assignment resulted in equal group sizes, and no participant withdrew from the study during the intervention period. Baseline comparisons indicated that the two groups had relatively similar levels of rumination and cognitive bias prior to the intervention, suggesting adequate group equivalence before treatment implementation.

Table 1

Descriptive Statistics of Rumination and Cognitive Bias Scores in the Experimental and Control Groups

Variable	Assessment	Experimental Group Mean	SD	Control Group Mean	SD
Rumination	Pre-test	60.43	5.69	62.15	5.65
Rumination	Post-test	47.23	4.67	61.75	5.48
Cognitive Bias	Pre-test	101.27	11.35	99.64	11.56
Cognitive Bias	Post-test	90.48	10.45	100.37	11.79

Table 1 presents the means and standard deviations of the study variables across the experimental and control groups. As shown, participants in the experimental group demonstrated a notable reduction in rumination scores from pre-test ($M = 60.43$, $SD = 5.69$) to post-test ($M = 47.23$, $SD = 4.67$), whereas the control group exhibited minimal change over the same period. Similarly, cognitive bias scores decreased substantially in the experimental group from a pre-test mean of 101.27 ($SD = 11.35$) to a post-test mean of 90.48 ($SD = 10.45$), while scores in the control group remained relatively stable. These descriptive findings provide preliminary evidence for the effectiveness of Mindfulness-Based Cognitive Therapy in reducing both rumination and cognitive bias.

Before conducting the primary analyses, the assumption of normality was examined using the Shapiro–Wilk test. The

results indicated that all significance values exceeded the criterion level of .05 for both study variables across the experimental and control groups. Therefore, the distributions of rumination and cognitive bias scores did not significantly deviate from normality, confirming that the assumption of normal distribution was met and that the use of parametric statistical procedures was appropriate.

To evaluate the effectiveness of Mindfulness-Based Cognitive Therapy on rumination and cognitive bias, repeated-measures analysis of variance was conducted. The results revealed significant effects of time and significant Time $\times$ Group interaction effects for both dependent variables, indicating that changes over time differed significantly between the experimental and control groups.

Table 2

Repeated-Measures Analysis of Variance for Rumination and Cognitive Bias

Variable	Source	SS	df	MS	F	p	η^2
Rumination	Time	1254.935	1	1254.935	78.427	< .001	.653
	Time $\times$ Group	825.147	2	412.573	16.354	< .001	.521
	Error	106.357	27	3.939	—	—	—
Cognitive Bias	Time	2963.485	1	2963.485	105.553	< .001	.785
	Time $\times$ Group	1485.639	2	742.819	31.186	< .001	.548
	Error	251.147	27	9.301	—	—	—

The repeated-measures ANOVA findings demonstrated a significant main effect of time on rumination, $F(1, 27) = 78.427$, $p < .001$, $\eta^2 = .653$, indicating that rumination scores changed significantly across measurement occasions. Furthermore, the Time $\times$ Group interaction was significant, $F(2, 27) = 16.354$, $p < .001$, $\eta^2 = .521$, suggesting that the reduction in rumination was substantially greater in the experimental group than in the control group. For cognitive bias, the analysis revealed a significant main effect of time, $F(1, 27) = 105.553$, $p < .001$, $\eta^2 = .785$, as well as a significant Time $\times$ Group interaction, $F(2, 27) = 31.186$, $p < .001$, $\eta^2 = .548$. These results indicate that participants who received Mindfulness-Based Cognitive Therapy experienced significantly greater improvements in cognitive bias compared with those in the control group. Overall, the findings support the effectiveness of Mindfulness-Based Cognitive Therapy in reducing rumination and cognitive bias among individuals referred to counseling centers.

4. Discussion and Conclusion

The present study aimed to determine the effectiveness of Mindfulness-Based Cognitive Therapy (MBCT) on rumination and cognitive bias among individuals referred to counseling centers. The findings demonstrated that participation in the MBCT program resulted in significant reductions in both rumination and cognitive bias in the experimental group compared with the control group. Repeated-measures analyses revealed significant effects of time and significant Time $\times$ Group interaction effects for both variables, indicating that the observed improvements were attributable to the intervention rather than natural fluctuations over time. These findings suggest that MBCT is an effective therapeutic approach for modifying maladaptive cognitive processes that contribute to psychological distress and impaired functioning.

The first major finding of the study indicated that MBCT significantly reduced rumination among participants referred to counseling services. The reduction in rumination

scores observed in the experimental group is consistent with a growing body of literature highlighting the effectiveness of mindfulness-based interventions in disrupting repetitive negative thinking patterns. This finding is aligned with the results reported by (Esmacilzadeh Torshaye, 2025), who found that MBCT significantly improved emotional functioning and reduced rumination among women with irritable bowel syndrome. Similarly, the findings correspond with the work of (Fakourian & Fakourian, 2025), who reported reductions in loneliness, rejection sensitivity, and rumination among older adults following mindfulness-based interventions. The present results also support the conclusions of (Zhang et al., 2025), who demonstrated that MBCT reduced rumination and facilitated positive psychological adaptation among patients recovering from acute cerebral infarction.

Several theoretical mechanisms may explain the observed reduction in rumination. Rumination is characterized by repetitive attention to distressing thoughts, emotions, and personal difficulties, often without movement toward problem resolution. Individuals who ruminate become trapped in cycles of self-focused attention that intensify emotional distress and impair adaptive coping. According to cognitive theories, persistent rumination narrows attentional focus and reinforces negative cognitive schemas, making it difficult for individuals to disengage from distressing thoughts (Papageorgiou & Wells, 2019; Yousefi, 2021). MBCT directly addresses this process by teaching participants to observe thoughts and emotions as temporary mental events rather than objective realities. Through mindfulness practices, individuals learn to develop a decentered perspective toward their internal experiences, allowing them to disengage from automatic cognitive reactions and reduce the tendency to become absorbed in repetitive thinking patterns (Segal et al., 2013).

The present findings can also be interpreted within the broader framework of metacognitive awareness. One of the primary goals of MBCT is to enhance awareness of cognitive and emotional experiences while reducing automatic identification with negative thoughts. As participants become more aware of their mental processes, they gain greater capacity to recognize the onset of ruminative cycles and redirect attention toward present-moment experiences. This enhanced metacognitive awareness weakens the self-perpetuating nature of rumination and promotes more adaptive forms of emotional regulation. Previous studies have suggested that mindfulness strengthens attentional control and cognitive flexibility,

thereby reducing the likelihood that individuals will become trapped in repetitive negative thought patterns (Creswell, 2017; Mirzazadeh et al., 2022). Consequently, the reduction in rumination observed in the current study appears consistent with the theoretical foundations of MBCT.

Another explanation for the effectiveness of MBCT involves its influence on emotional regulation processes. Rumination often emerges as an ineffective attempt to understand, control, or resolve negative emotions. Unfortunately, repetitive thinking typically intensifies emotional distress rather than alleviating it. Mindfulness training encourages acceptance rather than avoidance of emotional experiences, enabling individuals to tolerate difficult emotions without engaging in maladaptive cognitive responses. This shift from emotional avoidance to emotional acceptance may reduce the need for repetitive self-focused thinking and promote healthier coping strategies. Similar mechanisms have been proposed by (Luo et al., 2025), who found that mindfulness reduced depressive mood through its effects on rumination and anxiety.

The findings are also consistent with studies demonstrating the effectiveness of other psychological interventions targeting rumination. For example, (Akbari, 2018) reported significant reductions in rumination and psychological symptoms following transcranial direct current stimulation among patients with major depression, while (Beigi et al., 2023) found that neurofeedback therapy reduced rumination among individuals with social anxiety. Although these interventions differ in methodology, their success underscores the importance of modifying maladaptive cognitive processes as a pathway to improved psychological functioning. The present study contributes to this literature by demonstrating that MBCT can achieve similar outcomes within a counseling population.

The second major finding revealed that MBCT significantly reduced cognitive bias among participants. This result suggests that mindfulness-based interventions may not only influence emotional experiences but also modify fundamental patterns of information processing. The finding is consistent with research indicating that mindfulness enhances cognitive flexibility and reduces maladaptive cognitive distortions. Previous investigations have shown that interventions targeting attentional and interpretive biases can significantly improve psychological functioning by altering how individuals process environmental information (Arsenjani et al., 2020; MacLeod et al., 2020). The present findings extend this evidence by suggesting that MBCT may serve as an effective approach

for reducing broader forms of cognitive bias among individuals seeking psychological services.

Cognitive bias is a central feature of many psychological disorders and refers to systematic distortions in attention, interpretation, and evaluation processes. Individuals experiencing cognitive bias tend to selectively attend to negative information, interpret ambiguous situations pessimistically, and maintain dysfunctional beliefs about themselves and their environment. These distorted processing patterns reinforce emotional distress and contribute to the maintenance of psychological difficulties (Mehrafzoon et al., 2021). By fostering a nonjudgmental awareness of thoughts and experiences, MBCT may interrupt these biased processing patterns and encourage more balanced evaluations of internal and external events.

One mechanism through which MBCT may reduce cognitive bias is the enhancement of attentional regulation. Mindfulness training repeatedly directs attention toward present-moment experiences while encouraging participants to recognize distractions and gently return attention to the intended focus. Over time, this process strengthens executive control and attentional flexibility, reducing the automatic influence of negative stimuli on cognitive processing. Improved attentional control may help individuals disengage from threat-related information and reduce the preferential processing of negative stimuli that characterizes many forms of cognitive bias (MacLeod et al., 2020). Consequently, participants become better able to evaluate situations objectively rather than relying on habitual cognitive distortions.

Another important explanation concerns the role of mindfulness in weakening dysfunctional schemas and self-critical thinking patterns. Cognitive biases are often rooted in deeply held beliefs about personal inadequacy, vulnerability, rejection, or failure. These beliefs influence how information is interpreted and remembered. MBCT encourages participants to observe such beliefs without automatically accepting them as accurate representations of reality. Through repeated mindfulness practice, individuals learn that thoughts are mental events rather than facts, reducing the power of maladaptive schemas to shape perception and judgment. This process may explain the observed reductions in cognitive bias and is consistent with theoretical descriptions of mindfulness as a means of cultivating psychological flexibility and cognitive openness (Mirzazadeh et al., 2022; Segal et al., 2013).

The findings may also be interpreted in light of contemporary theories emphasizing the relationship between

cognition and emotional distress. According to cognitive models, biased information processing contributes to the persistence of anxiety, depression, and other emotional disorders. When individuals consistently interpret experiences through negative cognitive filters, emotional difficulties become increasingly resistant to change. By modifying these filters, MBCT may create opportunities for more adaptive emotional and behavioral responses. The significant reduction in cognitive bias observed in the current study therefore suggests that mindfulness-based interventions can address a fundamental cognitive mechanism underlying psychological distress (Azad, 2022).

The present findings gain further support from recent comprehensive evaluations of mindfulness-based interventions. A systematic review and meta-analysis conducted by (Wei et al., 2025) concluded that MBCT is effective in reducing rumination and improving a range of psychological outcomes across diverse populations. The consistency between those findings and the results of the current study strengthens confidence in the robustness of MBCT as an evidence-based intervention. Moreover, the effectiveness observed in a counseling-center population suggests that MBCT may have broad applicability beyond narrowly defined clinical groups.

Taken together, the results of the present study support the proposition that MBCT operates through multiple complementary mechanisms. By enhancing present-moment awareness, strengthening attentional control, increasing metacognitive awareness, fostering emotional acceptance, and promoting cognitive flexibility, the intervention appears capable of reducing both repetitive negative thinking and distorted cognitive processing. Because rumination and cognitive bias are closely interconnected processes that mutually reinforce one another, improvements in one domain may contribute to improvements in the other. As individuals become less absorbed in repetitive thoughts, they may also become less susceptible to biased interpretations, creating a positive cycle of cognitive and emotional improvement.

Several limitations should be considered when interpreting the findings of this study. First, the relatively small sample size limits the generalizability of the results to broader populations. Second, participants were recruited from a single counseling center using convenience sampling, which may reduce the representativeness of the sample. Third, the study relied exclusively on self-report measures, which are susceptible to response bias, social desirability effects, and inaccuracies in self-perception. Fourth, the

absence of a follow-up assessment prevented evaluation of the long-term maintenance of treatment gains. Finally, the study did not examine potential moderating variables such as age, gender, educational background, or severity of psychological symptoms that may influence treatment outcomes.

Future studies should employ larger and more diverse samples drawn from multiple counseling and clinical settings to enhance the generalizability of findings. Researchers are encouraged to incorporate long-term follow-up assessments to determine the durability of treatment effects over time. Comparative investigations examining MBCT alongside other evidence-based interventions may provide valuable insights into relative effectiveness and mechanisms of change. Future research could also explore mediating and moderating factors, such as emotional regulation, psychological flexibility, resilience, and demographic characteristics, to better understand how and for whom MBCT produces optimal outcomes. Additionally, the inclusion of behavioral, physiological, and neurocognitive measures may provide a more comprehensive assessment of intervention effects.

The findings of the present study suggest that Mindfulness-Based Cognitive Therapy can be effectively integrated into counseling and mental health services to address maladaptive cognitive processes. Counselors and psychotherapists may consider incorporating mindfulness-based techniques into routine clinical practice to help clients manage repetitive negative thinking and distorted cognitive patterns. Training programs for mental health professionals could include specialized instruction in mindfulness-based interventions to increase treatment accessibility and quality. Counseling centers, educational institutions, and community mental health organizations may also benefit from offering structured mindfulness programs as preventive and therapeutic services. Such initiatives have the potential to improve psychological well-being, enhance emotional regulation, and reduce vulnerability to a wide range of mental health difficulties.

Authors' Contributions

All authors significantly contributed to this study.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the study and participated in the research with informed consent.

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