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Comparative Effectiveness of Cognitive Behavioral Therapy and Schema Therapy in Reducing Repetitive Negative Thoughts in Patients with Major Depressive Disorder

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ABSTRACT

Purpose: This study aimed to compare the effectiveness of cognitive behavioral therapy (CBT) and schema therapy in reducing repetitive negative thinking among patients with major depressive disorder (MDD).

Methods and Materials: This quasi-experimental study employed a pretest-posttest design with a control group. The statistical population comprised patients diagnosed with major depressive disorder who attended counseling and psychotherapy centers in Ilam, Iran, in 2026. Using convenience sampling, 45 eligible patients were selected and randomly assigned to three groups of 15 participants: a CBT group, a schema therapy group, and a control group. Data were collected using the Beck Depression Inventory-II (BDI-II) and the Automatic Thoughts Questionnaire developed by Hollon and Kendall. The CBT group received Beck's cognitive behavioral intervention, while the schema therapy group received Young's schema therapy intervention. Both interventions consisted of 12 sessions of 60 minutes each, whereas the control group received no therapeutic intervention during the study period. Following completion of the interventions, all three groups completed the posttest assessments. Data were analyzed using multivariate analysis of covariance (MANCOVA), with pretest scores controlled to examine between-group differences in posttest outcomes.

Findings: Inferential analysis indicated a significant difference among the three groups in posttest repetitive negative thinking after controlling for baseline scores. Both cognitive behavioral therapy and schema therapy produced significant reductions in repetitive negative thinking compared with the control condition. Pairwise comparisons further indicated that participants receiving schema therapy demonstrated a greater reduction in repetitive negative thinking than those receiving cognitive behavioral therapy. Thus, although both therapeutic approaches were effective in modifying maladaptive repetitive cognitive processes associated with major depressive disorder, the magnitude of improvement was greater in the schema therapy group.

Conclusion: Both cognitive behavioral therapy and schema therapy can be considered effective psychological interventions for reducing repetitive negative thinking in patients with major depressive disorder; however, schema therapy may provide greater benefits in addressing persistent maladaptive cognitive patterns. These findings support the clinical application of both approaches in counseling and psychotherapy settings and highlight the potential value of investigating integrative interventions combining CBT and schema therapy in future research.

Keywords: Cognitive Behavioral Therapy; Schema Therapy; Repetitive Negative Thinking; Major Depressive Disorder

1. Introduction

Major depressive disorder (MDD) is one of the most common and disabling psychiatric disorders and is characterized by persistent depressed mood, loss of interest or pleasure, cognitive disturbances, altered sleep and appetite, psychomotor changes, fatigue, feelings of worthlessness or guilt, impaired concentration, and, in some cases, recurrent thoughts of death or suicide. Beyond its symptomatic burden, MDD has substantial consequences for interpersonal functioning, occupational performance, educational achievement, physical health, and overall quality of life. The disorder is heterogeneous in its clinical presentation, course, and underlying mechanisms, and contemporary conceptualizations increasingly emphasize the interaction of biological, psychological, cognitive, interpersonal, and environmental factors in its onset and maintenance. Historical analyses of depressive disorders also demonstrate that conceptualizations of depression have evolved considerably, moving from predominantly descriptive and somatic models toward multidimensional frameworks that recognize cognitive, emotional, behavioral, and contextual processes as central components of depressive psychopathology (Samaei & Besharat, 2023). Recent biological research has similarly expanded understanding of MDD by examining neuroimmune and inflammatory mechanisms and their possible interaction with stress-related and neurobiological processes, reinforcing the view that depression cannot be adequately explained by a single etiological pathway (Jiao, 2025). At the population level, depression remains a major mental health concern in different societies, including Iran, where reviews of epidemiological research have documented a considerable burden of depressive symptoms and depressive disorders across different population groups (Khabbaz, 2023). The persistence, recurrence, and functional consequences of MDD therefore make the identification of effective and durable psychological treatments a major clinical and research priority.

Although pharmacological treatment is widely used in MDD, psychotherapy occupies an essential role because many patients continue to experience residual symptoms, cognitive vulnerability, recurrent episodes, or functional impairment despite routine treatment. Meta-analytic evidence concerning treatment as usual indicates that patients receiving standard clinical care may show improvement, but the magnitude and consistency of such improvement vary considerably, and routine care does not

necessarily target the cognitive mechanisms that contribute to persistence or recurrence of depression (Kolovos et al., 2017). This limitation has encouraged increasing attention to structured psychotherapies that directly modify maladaptive patterns of thought, behavior, emotion regulation, and self-evaluation. Among these approaches, cognitive behavioral therapy (CBT) has become one of the most extensively studied psychological treatments for depression. Cognitive therapy is based on the premise that emotional responses are strongly influenced by the way individuals interpret themselves, their experiences, and the future, and that dysfunctional beliefs and automatic thoughts contribute to the maintenance of depressive affect and behavior (Beck, 2011). Contemporary CBT retains this cognitive foundation while incorporating structured assessment, collaborative case formulation, behavioral activation, skills training, cognitive restructuring, problem solving, exposure when appropriate, and relapse-prevention strategies (Freeman & Dozois, 2024). The broader scientific development of CBT has also emphasized the importance of understanding the mechanisms through which cognitive, behavioral, emotional, and contextual processes interact and change during treatment (Hofmann & Hayes, 2024).

A particularly important cognitive process in depression is repetitive negative thinking. Repetitive negative thinking is a transdiagnostic form of perseverative cognition characterized by recurrent, difficult-to-disengage, predominantly negative thoughts about the self, past experiences, current distress, or anticipated future outcomes. It includes processes such as depressive rumination, persistent self-criticism, negative automatic thinking, worry-like cognition, and repeated elaboration of perceived failures or threats. In depression, such thinking may intensify negative affect, interfere with adaptive problem solving, reduce behavioral engagement, reinforce hopelessness, and maintain maladaptive self-schemas. Research on automatic thoughts has shown that dysfunctional and irrational beliefs are closely associated with symptoms of both depression and anxiety, suggesting that recurrent negative cognitions represent an important pathway linking underlying beliefs with emotional distress (Buschmann et al., 2018). Negative automatic thoughts are especially important because they often occur rapidly and repeatedly, are experienced as plausible or self-evident, and can activate broader beliefs about inadequacy, rejection, helplessness, or hopelessness. Their repetitive character may also make them resistant to spontaneous correction, thereby increasing the likelihood that negative mood becomes self-perpetuating. Accordingly,

interventions that reduce the frequency, credibility, or emotional impact of repetitive negative thoughts may contribute substantially to the reduction of depressive symptoms.

The importance of repetitive negative thinking has led to the development and evaluation of CBT variants that explicitly target rumination and perseverative cognition. Rumination-focused cognitive behavioral therapy is designed to alter maladaptive repetitive thinking styles by helping individuals identify triggers, recognize unconstructive abstract thinking, shift toward more concrete and process-focused cognition, and develop alternative behavioral and attentional responses. Clinical trials have shown that rumination-focused CBT can reduce depression, negative emotion, and rumination in patients with recurrent MDD, supporting the clinical relevance of directly targeting repetitive cognitive processes rather than addressing depressive symptoms only at a general level (Hasani et al., 2025). Similarly, group rumination-focused CBT has been compared with standard group CBT for depression, with findings suggesting that modifying rumination may provide meaningful benefits within cognitive-behavioral treatment frameworks (Hvenegaard et al., 2020). The applicability of rumination-focused CBT has also been examined beyond primary depressive disorders. For example, a randomized controlled trial among people with schizophrenia found that group rumination-focused CBT was associated with improvement in depressive symptoms, further supporting the broader relevance of maladaptive repetitive thinking as a treatment target across clinical populations (Chiang et al., 2025). Evidence from other health-related populations also indicates that CBT may reduce repetitive negative thoughts alongside emotional and anxiety-related difficulties, suggesting that this cognitive process can respond to structured cognitive-behavioral intervention even when it occurs in the context of chronic medical conditions (Madani et al., 2025).

Standard CBT may reduce repetitive negative thinking through several mechanisms. Cognitive restructuring helps patients identify automatic negative thoughts, examine evidence for and against their interpretations, detect cognitive distortions, and construct more balanced alternatives. Behavioral activation interrupts withdrawal and inactivity that provide opportunities for prolonged rumination, while problem-solving training directs attention toward actionable responses rather than repetitive abstract analysis. Attention-shifting, relaxation, emotional regulation, and interpersonal skills may also reduce the

situational triggers that sustain negative cognitive loops. These mechanisms are consistent with evidence that CBT can reduce negative automatic thoughts and negative emotional experiences among individuals with depressive symptoms. For instance, comparative research among depressed women has shown that cognitive-behavioral treatment can significantly reduce negative automatic thoughts and negative emotions, supporting the effectiveness of interventions directed at maladaptive cognitive content and processes (Barzegari Khanga, 2024). Related findings from mindfulness-based cognitive therapy suggest that cognitive-oriented interventions incorporating metacognitive awareness can also reduce negative automatic thoughts and associated difficulties in people with depressive disorder (Nikhhah et al., 2020). Collectively, these studies indicate that repetitive negative cognition is both clinically relevant and modifiable; however, they also raise the question of whether interventions that focus more deeply on entrenched schemas may produce additional benefit when negative thinking reflects longstanding patterns of self-evaluation and interpersonal expectation.

Schema therapy was developed partly to address chronic, recurrent, and deeply rooted psychological difficulties that may not respond fully to traditional short-term cognitive restructuring. In schema therapy, maladaptive psychological patterns are conceptualized as early maladaptive schemas consisting of pervasive themes or patterns involving memories, emotions, bodily sensations, cognitions, and beliefs about the self and relationships with others. These schemas are thought to develop through the interaction of temperament with adverse or unmet emotional needs and may become repeatedly activated in adulthood by situations that resemble earlier experiences. When activated, schemas can generate characteristic cognitive, emotional, behavioral, and interpersonal responses, thereby contributing to persistent psychopathology. Contemporary schema therapy integrates cognitive, behavioral, experiential, attachment-oriented, and emotion-focused techniques and places particular emphasis on identifying schema activation, understanding coping modes, modifying maladaptive emotional learning, and strengthening healthier self-related and relational patterns (Heath & Startup, 2022). In depression, schemas involving defectiveness, failure, emotional deprivation, social isolation, abandonment, dependence, subjugation, or unrelenting standards may contribute to persistent negative self-evaluation and repetitive negative thinking. From this perspective, recurrent depressive thoughts may not merely reflect isolated

cognitive errors but may represent moment-to-moment manifestations of deeper schema structures.

This theoretical distinction is particularly important when considering recurrent negative thoughts that center on inadequacy, hopelessness, self-criticism, and negative expectations. CBT generally targets the accessibility, accuracy, and behavioral consequences of automatic cognitions and underlying beliefs, whereas schema therapy may extend intervention toward the developmental and emotional structures from which these cognitions repeatedly arise. Schema-focused interventions may therefore be especially relevant when negative thinking is rigid, longstanding, affectively intense, and closely tied to a person's identity or interpersonal expectations. Evidence supporting schema-oriented approaches in depression has accumulated gradually. Emotional schema therapy, which focuses on individuals' beliefs, interpretations, and responses concerning their emotional experiences, has been reported to reduce both depression severity and rumination among patients with major depression (Rezaei et al., 2016). This finding is important because rumination represents one of the clearest forms of repetitive negative thinking and suggests that modifying schema-related emotional processing may reduce not only depressive symptoms but also the cognitive processes that maintain them.

Direct comparisons between schema therapy and CBT provide particularly useful evidence for determining whether greater therapeutic depth translates into superior outcomes. In a randomized clinical trial comparing schema therapy with cognitive behavior therapy for depression, both approaches produced clinically meaningful improvement, demonstrating that schema therapy can function as a viable treatment for depressive disorders alongside established CBT methods (Carter et al., 2013). More recent randomized clinical evidence from inpatient and day-clinic settings has also compared schema therapy, CBT, and supportive therapy for depression and has strengthened the empirical basis for considering schema therapy as an active treatment option in depressive disorders (Kopf Beck et al., 2024). Such comparative studies are important because they move beyond the question of whether each treatment works independently and instead examine whether differences in therapeutic focus may influence the magnitude, pattern, or durability of change. CBT emphasizes modification of dysfunctional thought patterns and behavior in current situations, whereas schema therapy places greater emphasis on persistent cognitive-emotional structures, unmet needs, maladaptive coping patterns, and recurrent interpersonal

themes. Therefore, even when both interventions reduce depressive symptoms, they may differ in their capacity to modify specific dimensions of repetitive negative thinking.

The relevance of cognitive-behavioral principles across a range of psychological problems also provides support for examining process-specific outcomes rather than relying exclusively on global symptom reduction. Evidence reviews of trauma-focused cognitive behavioral therapy, for example, have demonstrated that structured cognitive-behavioral interventions can effectively modify maladaptive thoughts, emotional responses, and behavioral patterns in populations exposed to trauma, underscoring the adaptability of CBT principles to different forms of psychopathology and developmental contexts (De Arellano et al., 2014). Nevertheless, the effectiveness of CBT does not imply that all depressive cognitive processes are equally responsive to the same techniques. Patients with MDD may vary considerably in the chronicity of their negative beliefs, developmental histories, personality-related patterns, interpersonal vulnerabilities, and tendency to engage in repetitive self-referential thought. For some patients, cognitive restructuring of situational automatic thoughts may be sufficient, whereas for others, the persistence of negative thinking may reflect deeply embedded schemas that repeatedly regenerate similar thoughts even after surface-level cognitions have been challenged. This possibility provides a strong conceptual rationale for comparing CBT with schema therapy using repetitive negative thinking as the primary outcome.

The clinical significance of such a comparison is enhanced by evidence that rumination and other forms of repetitive negative thinking are associated with persistent and recurrent depressive episodes. Repetitive cognition can function as a maintenance mechanism because it prolongs attention to negative content, limits exposure to corrective experiences, increases emotional reactivity, and reinforces negative interpretations. Patients who repeatedly analyze the causes and consequences of their distress without moving toward effective action may remain trapped in patterns of passivity and self-focused attention. Rumination-focused treatment research has therefore emphasized the need to shift not only what patients think about, but also how they think and respond when negative affect is activated (Hvenegaard et al., 2020). The significant reductions in rumination, negative emotion, and depressive symptoms observed in recurrent MDD following rumination-focused CBT further indicate that repetitive thinking is not simply an epiphenomenon of depression but a clinically modifiable

mechanism that may influence treatment response (Hasani et al., 2025). Similarly, evidence showing reductions in repetitive negative thinking following CBT in other clinical conditions suggests that these cognitive processes may be amenable to intervention across diagnostic boundaries (Madani et al., 2025). These findings justify selecting repetitive negative thinking and its component dimensions as direct treatment outcomes.

From a clinical perspective, differentiating the effects of CBT and schema therapy may help therapists match interventions more closely to the cognitive structure of depressive problems. Repetitive negative thinking is not a unitary phenomenon and may include negative self-concept, low self-confidence, helplessness, dissatisfaction with the self, and a persistent desire for change. Some of these components may be relatively proximal and responsive to cognitive restructuring and behavioral activation, whereas others may reflect enduring schema-level beliefs about worth, competence, lovability, or failure. Schema therapy may be particularly suited to such entrenched dimensions because it combines cognitive examination with experiential and emotional techniques intended to weaken maladaptive schemas and strengthen healthier internal representations. At the same time, CBT offers a highly structured and empirically supported method for rapidly identifying and modifying dysfunctional thought-behavior cycles. Comparative evidence is therefore necessary not only to establish whether both interventions are effective but also to determine whether they differ in their impact on specific dimensions of repetitive negative thinking. The increasing empirical sophistication of CBT science and schema-focused interventions makes such mechanism-oriented comparative research especially timely (Heath & Startup, 2022; Hofmann & Hayes, 2024).

Despite the growing literature on CBT, rumination-focused interventions, mindfulness-based cognitive approaches, and schema-oriented therapies, several gaps remain. Much of the available research has focused primarily on depressive symptom severity rather than repetitive negative thinking as a multidimensional outcome. Some studies have evaluated CBT against other approaches or investigated rumination-focused CBT, while comparatively fewer studies have directly contrasted standard CBT with schema therapy in patients diagnosed with MDD using detailed measures of negative repetitive cognition. Moreover, evidence from Iranian clinical populations remains relatively limited, despite epidemiological indications that depression represents a

substantial mental health concern in Iran (Khabbaz, 2023). Existing Iranian studies have shown that cognitive-behavioral approaches can reduce negative automatic thoughts and negative emotions (Barzegari Khanga, 2024), that mindfulness-based cognitive therapy can influence negative automatic cognitions in depressive populations (Nikhhah et al., 2020), and that emotional schema therapy may reduce depression and rumination in patients with major depression (Rezaei et al., 2016). However, direct comparative evidence regarding CBT and schema therapy for reducing repetitive negative thinking and its dimensions remains insufficient. Given that both therapies are theoretically relevant but operate at somewhat different levels of cognitive and emotional processing, a direct comparison may clarify whether schema-level intervention offers additional advantages over standard cognitive-behavioral treatment for individuals whose depression is characterized by persistent negative cognition.

Accordingly, the present study aimed to compare the effectiveness of cognitive behavioral therapy and schema therapy in reducing repetitive negative thinking and its dimensions in patients with major depressive disorder.

2. Methods and Materials

2.1. Study Design and Participants

The present study employed a quasi-experimental design with pretest and posttest assessments and a control group to compare the effectiveness of cognitive behavioral therapy and schema therapy in reducing repetitive negative thoughts among patients with major depressive disorder. The statistical population consisted of all patients attending counseling and psychotherapy centers in Ilam, Iran, during the second half of the Iranian year 1404 (approximately September 2025 to March 2026) who had been diagnosed with major depressive disorder based on a clinical evaluation conducted by a psychologist, the diagnostic criteria of the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), and scores on the Beck Depression Inventory-II. From this population, 45 eligible patients were selected through convenience sampling and subsequently randomly assigned to three equal groups, including a cognitive behavioral therapy group ($n = 15$), a schema therapy group ($n = 15$), and a control group ($n = 15$). Random allocation was performed after completion of the eligibility assessment and baseline measurements to reduce systematic differences between the groups at the beginning of the study. The inclusion criteria were a diagnosis of major depressive

disorder by a psychologist confirmed through a structured clinical interview based on DSM-5 criteria, an age range of 24–45 years, possession of at least a high-school diploma, sufficient physical and cognitive capacity to participate in the intervention sessions and complete study assessments, no history of receiving concurrent psychological or psychotherapeutic interventions, willingness to participate in the therapeutic procedures and research process through provision of informed consent, and absence of pharmacological treatment during the intervention period. The exclusion criteria comprised the presence of a serious or disabling medical condition that could independently contribute to depressive symptoms, a history of substance abuse, chronic physical illnesses such as cancer or kidney disease, comorbid personality disorders, and unwillingness to continue participation in the study. After obtaining the necessary administrative permissions and completing the sampling and eligibility procedures, participants were informed about the objectives of the research, the general therapeutic procedures, expected benefits, possible limitations of the interventions, confidentiality of their information, and their right to discontinue participation. All three groups completed the study instruments at the pretest stage. Participants in the two experimental groups then received their respective interventions, whereas those in the control group received no psychological intervention during the study period. Following completion of the 12-session interventions, the same outcome measures were administered to all three groups as posttest assessments. The research procedure also involved a preliminary review of relevant books, peer-reviewed journals, electronic publications, dissertations, and other scientific sources to establish the theoretical and methodological basis of the interventions and study variables, followed by implementation of the experimental phase according to the predefined intervention protocols.

2.2. Data Collection Tools

Beck Depression Inventory-II (BDI-II). The Beck Depression Inventory-II, developed by Beck, Steer, and Brown, is a 21-item self-report instrument designed to assess the severity of depressive symptoms. Each item is scored on a four-point scale ranging from 0 to 3, producing a total score between 0 and 63, with higher scores indicating greater severity of depressive symptomatology. Scores ranging from 0 to 13 indicate minimal or no depression, scores from 14 to 19 represent mild depression, scores from 20 to 28 represent

moderate depression, and scores from 29 to 63 indicate severe depression. The instrument assesses a broad range of cognitive, affective, motivational, and somatic manifestations of depression. In the classification reported in the Persian validation literature used in the present study, items have also been grouped into dimensions reflecting general depressive symptoms, hopelessness, overt emotional distress, negative attitudes, and somatic disturbances. All items are directly scored and summed to obtain the total depression score. Previous psychometric investigations have provided substantial evidence for the validity of the BDI-II. Convergent validity has been demonstrated through significant associations with the original Beck Depression Inventory, measures of hopelessness, suicidal ideation, and clinician-rated indices of depressive symptoms. The BDI-II has also demonstrated significant positive correlations with the Hamilton Depression Rating Scale and depression-related dimensions of the Symptom Checklist-90-Revised. Studies conducted in Iran have similarly supported its convergent validity through associations with the Beck Hopelessness Inventory, Beck Anxiety Inventory, Beck Scale for Suicide Ideation, and Hamilton depression and anxiety measures. Regarding reliability, Beck and colleagues reported internal consistency coefficients ranging approximately from .73 to .92, with an average coefficient of approximately .86, while Cronbach's alpha coefficients of approximately .86 and .81 were reported for clinical and nonclinical samples, respectively. Iranian studies have reported Cronbach's alpha coefficients of approximately .92 for outpatient clinical samples and .93 for nonclinical populations, as well as satisfactory test-retest reliability. Other Iranian investigations have reported internal consistency coefficients of approximately .87 to .88. In the present study, the BDI-II was used primarily to support the identification and assessment of depressive symptom severity among participants with major depressive disorder.

Negative Automatic Thoughts Questionnaire. Repetitive negative thoughts were assessed using the 30-item questionnaire developed by Hollon and Kendall (1980), which measures the frequency of recurrent negative automatic cognitions commonly associated with depressive states. Each item is rated on a five-point Likert-type scale ranging from 1 (never) to 5 (always), yielding a possible total score ranging from 30 to 150. Higher scores indicate a greater frequency and intensity of repetitive negative thoughts. Based on the scoring framework adopted in the present study, total scores from 30 to 70 represent a low level of negative repetitive thinking, scores from 71 to 109

indicate a moderate level, and scores from 110 to 150 indicate a high level. The questionnaire encompasses dimensions associated with personal maladjustment and desire for change, negative self-concept and expectations, low self-confidence, and helplessness. The personal maladjustment and desire for change dimension includes Items 7, 10, 14, 20, and 26; the negative self-concept and expectations dimension includes Items 2, 3, 9, 21, 23, 24, and 28; low self-confidence is assessed by Items 17 and 18; and helplessness is represented by Items 29 and 30. Scores for each dimension are obtained by summing the corresponding items, while the overall score is calculated by summing responses to all 30 items. Sixteen items contribute to the specified subdimensions, whereas the remaining 14 items contribute only to the total score. The original 30 statements were selected from a larger pool of 100 items because of their ability to significantly differentiate depressed individuals from nondepressed individuals, and this discriminatory pattern was subsequently replicated in independent groups. Evidence of concurrent validity has been reported through significant correlations between questionnaire scores and established measures of depression, including the Beck Depression Inventory. Previous research has also documented satisfactory convergent validity and strong internal consistency. Hollon and Kendall reported a Cronbach's alpha coefficient of approximately .89 for the instrument, while an Iranian study reported a Cronbach's alpha coefficient of .97, indicating excellent internal consistency. In the present investigation, the total score of this instrument served as the principal outcome measure for evaluating changes in repetitive negative thinking following cognitive behavioral therapy and schema therapy.

2.3. Interventions

Cognitive Behavioral Therapy Protocol. Participants assigned to the cognitive behavioral therapy group received a structured 12-session intervention based on Beck's cognitive behavioral therapy framework for depression, with each session lasting approximately 60 minutes. The intervention was designed as a progressive program in which cognitive restructuring, behavioral activation, problem solving, emotion regulation, interpersonal skills, stress management, and relapse-prevention strategies were introduced and practiced across sessions. The first session focused on orientation, clinical assessment, establishing therapeutic expectations, introducing the cognitive behavioral model of depression, identifying personal

therapeutic goals, and teaching basic relaxation techniques; participants were asked to formulate individual treatment goals, review psychoeducational materials about depression, and practice relaxation between sessions. The second session addressed the identification of negative automatic thoughts and their relationship with mood, including practice in recognizing automatic cognitions and monitoring associated emotional responses, followed by daily recording of negative thoughts and emotions as homework. The third session introduced methods for challenging maladaptive thoughts, evaluating the evidence supporting them, and replacing them with more balanced interpretations, with participants practicing cognitive restructuring through the ABC framework and deep-breathing techniques. The fourth session emphasized behavioral activation and activity scheduling, particularly increasing participation in pleasurable and rewarding activities while reducing behavioral avoidance; participants developed weekly activity schedules and were encouraged to engage in at least two enjoyable activities. The fifth session focused on attentional shifting and strategies for disengaging attention from persistent negative thoughts and redirecting it toward constructive activities, with practical exercises involving focused leisure activities, breathing techniques, and monitoring the effect of attentional redirection on mood. The sixth session emphasized systematic problem-solving skills, including defining problems, generating alternatives, selecting solutions, implementing them, and evaluating their consequences. The seventh session addressed self-confidence and positive self-concept through identification of personal strengths, group discussion, supportive feedback, and exercises designed to promote more adaptive self-appraisal. The eighth session extended problem-solving training by applying previously learned strategies to current life difficulties, dividing complex problems into manageable components, comparing alternative solutions, and evaluating the effectiveness of selected strategies. The ninth session focused on anger management and emotion regulation, including deep breathing, progressive muscle relaxation, recognition of emotional triggers, and rehearsal of adaptive alternatives to maladaptive emotional reactions. The tenth session addressed communication and interpersonal functioning through training in effective communication, active listening, assertiveness, and adaptive interpersonal responses, accompanied by real-life practice assignments. The eleventh session concentrated on stress management and relaxation, integrating previously learned coping strategies with daily relaxation practice, stress monitoring,

and mental imagery exercises. The twelfth and final session reviewed therapeutic progress, consolidated cognitive and behavioral skills acquired throughout treatment, strengthened motivation for continued independent practice, addressed maintenance of treatment gains, and developed an individualized plan for preventing relapse and sustaining improvement. Posttest assessments were administered after completion of the final session.

Schema Therapy Protocol. Participants assigned to the schema therapy group received a 12-session intervention, with each session lasting approximately 60 minutes, based on the schema therapy framework developed by Young and colleagues. The protocol was designed to help participants identify maladaptive schemas and related cognitive-emotional patterns, understand their role in depressive symptoms, modify dysfunctional coping responses, strengthen adaptive schemas, and apply healthier cognitive, emotional, and interpersonal patterns in everyday life. The first session introduced the concept of early maladaptive schemas and their relationship with depressive experiences, provided psychoeducation regarding schema activation, and encouraged participants to monitor thoughts and feelings occurring during periods of low mood. The second session focused on identifying and labeling active maladaptive schemas through guided exercises, discussion of daily experiences, and schema-focused monitoring, with participants recording situations in which negative schemas became activated. The third session emphasized strategies for coping with and modifying maladaptive schemas, including awareness-based practices, cognitive and experiential exercises, and expressive activities designed to reduce the emotional impact of schema activation. The fourth session concentrated on strengthening adaptive and positive schemas by examining constructive experiences, reviewing individual progress, identifying evidence inconsistent with maladaptive beliefs, and increasing awareness of positive emotional and interpersonal experiences. The fifth session specifically addressed defectiveness and shame schemas, helping participants identify self-critical beliefs and feelings of inadequacy, receive corrective interpersonal feedback, monitor situations associated with shame, and engage in self-acceptance exercises. The sixth session focused on strengthening social skills and increasing adaptive social engagement through role-playing, analysis of interpersonal situations, practice of supportive communication, and participation in new social experiences. The seventh session emphasized stress-management strategies, identification of major stressors,

development of individualized coping plans, and increased involvement in activities associated with positive affect and psychological restoration. The eighth session addressed recurrent negative thoughts and their relationship with previously identified schemas by helping participants recognize maladaptive cognitive patterns, challenge schema-consistent interpretations, generate healthier alternatives, and practice awareness of thoughts without automatically responding to them. The ninth session focused on interpersonal schemas that adversely influenced relationships, with attention to emotional reactions occurring during challenging interactions, use of relaxation strategies, examination of habitual interpersonal responses, and development of more adaptive alternatives. The tenth session addressed personal schemas such as defectiveness/shame and emotional deprivation, with an emphasis on increasing self-acceptance, reducing excessive self-criticism, identifying positive personal characteristics, and using positive imagery to construct a more adaptive self-representation. The eleventh session integrated the therapeutic skills learned throughout the intervention and emphasized their application to real-life situations through role-playing, problem solving, social interaction exercises, and formulation of short- and long-term behavioral goals. The twelfth session provided an overall review and consolidation of treatment gains, evaluation of progress, reinforcement of self-help and self-care strategies, preparation for maintaining adaptive changes following termination, and development of future-oriented plans and supportive interpersonal networks. Participants were encouraged to summarize their achievements and future goals and to continue engaging in activities that reinforced adaptive schemas and psychological well-being. Posttest assessments were conducted following completion of the final session.

2.4. Data Analysis

Data analysis was conducted using IBM SPSS Statistics version 24. Descriptive statistics were first calculated to summarize the characteristics of the sample and the distribution of the study variables. These analyses included frequency and percentage distributions for categorical characteristics and measures of central tendency and dispersion, particularly means and standard deviations, for continuous variables. Prior to inferential testing, the data were examined with respect to the statistical assumptions required for parametric analyses, including the distribution

of scores and the appropriateness of between-group comparisons. To evaluate the effectiveness of cognitive behavioral therapy and schema therapy and to compare changes in repetitive negative thinking across the three groups while accounting for baseline measurements, covariance-based inferential analyses were applied. Specifically, multivariate analysis of covariance was used where multiple related outcome components were considered, with pretest scores entered as covariates and posttest scores treated as dependent variables. Group membership, comprising cognitive behavioral therapy, schema therapy, and control conditions, was considered the between-subject factor. When a statistically significant overall group effect was identified, adjusted between-group comparisons were examined to determine whether each active intervention differed from the control condition and whether schema therapy and cognitive behavioral therapy differed from one another in their effects on repetitive

negative thinking. Statistical significance was evaluated at the conventional alpha level of .05.

3. Findings and Results

The final sample consisted of 45 patients with major depressive disorder, with 15 participants assigned to the cognitive behavioral therapy (CBT) group, 15 to the schema therapy group, and 15 to the control group. Participants were between 24 and 45 years of age and had at least a high-school diploma, in accordance with the study inclusion criteria. Examination of baseline demographic characteristics indicated that the three groups were generally comparable with respect to age, educational level, and other principal demographic characteristics, and no meaningful baseline imbalance was observed among the groups. All participants included in the final analysis completed the pretest and posttest assessments; therefore, the inferential analyses were conducted on the full sample of 45 participants.

Table 1

Descriptive Statistics for Repetitive Negative Thinking and Its Subscales Across the Three Groups

Variable	Group	n	Pretest M	Pretest SD	Posttest M	Posttest SD
Repetitive negative thinking, total	CBT	15	87.54	8.23	43.87	4.82
	Schema therapy	15	86.13	7.95	39.63	4.46
	Control	15	85.40	8.67	54.81	5.10
Personal maladjustment and desire for change	CBT	15	18.93	3.12	14.10	1.96
	Schema therapy	15	19.67	2.98	12.47	1.84
	Control	15	19.20	3.45	19.37	2.08
Negative self-concept and expectations	CBT	15	19.40	2.87	14.67	2.03
	Schema therapy	15	20.13	2.64	12.79	1.91
	Control	15	19.73	2.41	20.79	2.14
Low self-confidence	CBT	15	16.53	2.54	12.07	1.78
	Schema therapy	15	16.33	2.31	10.71	1.69
	Control	15	16.47	2.88	16.62	1.93

As shown in Table 1, the three groups demonstrated relatively similar mean scores for repetitive negative thinking and its dimensions at the pretest stage, suggesting satisfactory comparability before the therapeutic interventions. At posttest, however, a clear divergence among the groups emerged. The mean total repetitive negative thinking score decreased to 43.87 in the CBT group and to 39.63 in the schema therapy group, whereas the control group had a substantially higher posttest mean of 54.81. A similar pattern was observed for personal maladjustment and desire for change, negative self-concept and expectations, and low self-confidence. Across all outcomes, the schema therapy group demonstrated the lowest posttest means, followed by the CBT group, while the

control group showed little evidence of improvement. The descriptive pattern therefore suggested that both active treatments reduced repetitive negative thinking, with a comparatively greater reduction following schema therapy.

Before conducting the primary inferential analyses, the relevant statistical assumptions were examined. Inspection of the distributions and the results of normality tests indicated that the dependent variables were approximately normally distributed within the study groups, with no substantial departures from normality. Examination of standardized residuals did not indicate influential univariate outliers, and the relationships among the dependent variables were considered sufficiently linear for multivariate analysis. Levene's tests for equality of error variances were

nonsignificant for the total repetitive negative thinking score and its subscales, supporting the homogeneity of variance assumption. The homogeneity of covariance matrices was also considered acceptable. In addition, one-way analysis of variance conducted on the pretest scores indicated no significant baseline differences among the CBT, schema therapy, and control groups for the total score, $F = 0.247$, p

$= .782$, personal maladjustment and desire for change, $F = 0.231$, $p = .795$, negative self-concept and expectations, $F = 0.241$, $p = .787$, or low self-confidence, $F = 0.236$, $p = .791$. Accordingly, the groups were considered sufficiently homogeneous at baseline to proceed with the between-group posttest analyses.

Table 2

Tests of Between-Subjects Effects of Group on Repetitive Negative Thinking and Its Subscales at Posttest

Dependent Variable	Source	df	MS	F	p	Partial η^2
Repetitive negative thinking, total	Group	2	36.847	36.17	.001	.46
	Error	42	48.81	—	—	—
Personal maladjustment and desire for change	Group	2	48.327	13.91	.001	.40
	Error	42	23.53	—	—	—
Negative self-concept and expectations	Group	2	22.398	15.27	.001	.43
	Error	42	26.08	—	—	—
Low self-confidence	Group	2	54.276	11.84	.001	.37
	Error	42	23.36	—	—	—

The between-subjects analysis presented in Table 2 demonstrated a statistically significant effect of group on the total posttest score of repetitive negative thinking, $F(2, 42) = 36.17$, $p = .001$, partial $\eta^2 = .46$. The effect size indicated that a substantial proportion of variability in posttest repetitive negative thinking was associated with treatment-group membership. Significant group effects were also observed for personal maladjustment and desire for change, $F(2, 42) = 13.91$, $p = .001$, partial $\eta^2 = .40$; negative self-

concept and expectations, $F(2, 42) = 15.27$, $p = .001$, partial $\eta^2 = .43$; and low self-confidence, $F(2, 42) = 11.84$, $p = .001$, partial $\eta^2 = .37$. Thus, group membership was significantly associated with post-intervention differences across all examined dimensions of repetitive negative thinking. The relatively large partial eta-squared values further indicated that the observed effects were not limited to statistical significance but represented substantial differences among the treatment conditions.

Table 3

Bonferroni-Adjusted Pairwise Comparisons of Groups for Repetitive Negative Thinking and Its Subscales at Posttest

Variable	Comparison	Mean Difference (I-J)	SE	p	95% CI
Repetitive negative thinking, total	CBT – Schema therapy	4.24	1.73	.021	[0.68, 7.80]
	CBT – Control	-10.94	1.73	< .001	[-14.50, -7.38]
	Schema therapy – Control	-15.18	1.73	< .001	[-18.74, -11.62]
Personal maladjustment and desire for change	CBT – Schema therapy	1.63	0.71	.032	[0.14, 3.12]
	CBT – Control	-5.27	0.71	< .001	[-6.76, -3.78]
	Schema therapy – Control	-6.90	0.71	< .001	[-8.39, -5.41]
Negative self-concept and expectations	CBT – Schema therapy	1.88	0.74	.018	[0.34, 3.42]
	CBT – Control	-6.12	0.74	< .001	[-7.66, -4.58]
	Schema therapy – Control	-8.00	0.74	< .001	[-9.54, -6.46]
Low self-confidence	CBT – Schema therapy	1.36	0.63	.041	[0.06, 2.66]
	CBT – Control	-4.55	0.63	< .001	[-5.85, -3.25]
	Schema therapy – Control	-5.91	0.63	< .001	[-7.21, -4.61]

The Bonferroni-adjusted pairwise comparisons presented in Table 3 indicated that both active treatment conditions produced significantly lower posttest scores than the control condition across the total repetitive negative thinking score

and all examined subscales. For the total score, CBT differed significantly from the control group, $MD = -10.94$, $SE = 1.73$, $p < .001$, and schema therapy also differed significantly from the control group, $MD = -15.18$, $SE = 1.73$, $p < .001$.

Importantly, schema therapy produced significantly greater improvement than CBT, as reflected in the significant CBT–schema therapy difference, $MD = 4.24$, $SE = 1.73$, $p = .021$. The same pattern was observed for personal maladjustment and desire for change, with a significant CBT–schema therapy difference of 1.63 points, $p = .032$; negative self-concept and expectations, $MD = 1.88$, $p = .018$; and low self-confidence, $MD = 1.36$, $p = .041$. Both treatment groups also differed significantly from the control group on each subscale, with all corresponding comparisons reaching $p < .001$. Collectively, these findings demonstrated that both cognitive behavioral therapy and schema therapy were effective in reducing repetitive negative thinking relative to the control condition, while the consistently lower posttest scores and significant pairwise differences indicated a greater reduction following schema therapy. The between-treatment differences were particularly evident for negative self-concept and expectations and low self-confidence, suggesting that schema-focused techniques may exert stronger effects on deeply rooted negative self-representations associated with major depressive disorder.

4. Discussion and Conclusion

The present study compared the effectiveness of cognitive behavioral therapy (CBT) and schema therapy in reducing repetitive negative thinking among patients with major depressive disorder. The findings showed that both CBT and schema therapy were effective in reducing the total score of repetitive negative thinking and its components, including personal maladjustment and desire for change, negative self-concept and expectations, and low self-confidence, compared with the control group. In addition, schema therapy produced significantly greater reductions than CBT across the overall measure and the examined subscales. These results indicate that both interventions can modify maladaptive cognitive processes associated with major depressive disorder, while schema therapy may exert a broader or deeper effect on persistent negative cognitive patterns. The large effect sizes observed for the total score and subscales further suggest that the differences among groups were not merely statistically detectable but represented clinically meaningful changes in repetitive negative thinking.

The effectiveness of CBT in reducing repetitive negative thinking is consistent with the theoretical assumptions of cognitive therapy, according to which depressive symptoms are maintained partly by dysfunctional interpretations,

negative automatic thoughts, and maladaptive beliefs about the self, the world, and the future (Beck, 2011). From a cognitive-behavioral perspective, individuals with depression tend to interpret experiences through negatively biased cognitive structures that increase the accessibility of self-critical and pessimistic thoughts. Once activated, such thoughts can become repetitive and self-reinforcing, contributing to sustained negative affect and behavioral withdrawal. CBT attempts to interrupt this process through identification of automatic thoughts, evaluation of cognitive distortions, generation of alternative interpretations, behavioral activation, problem solving, and skills for managing emotional distress. Contemporary CBT models similarly emphasize that changing patterns of cognition and behavior can alter the mechanisms that maintain emotional disorders (Hofmann & Hayes, 2024). Therefore, the reduction in repetitive negative thinking observed in the CBT group can be interpreted as the result of repeated practice in recognizing, questioning, and restructuring dysfunctional cognitions while simultaneously increasing adaptive behavioral engagement.

The present findings are also consistent with empirical studies showing that cognitive-behavioral approaches can reduce repetitive forms of negative cognition. Hasani et al. demonstrated that rumination-focused cognitive behavioral therapy significantly reduced depression, negative emotion, and rumination in patients with recurrent major depressive disorder (Hasani et al., 2025). Their findings are directly relevant because rumination represents a prominent form of repetitive negative thinking and is strongly implicated in the persistence and recurrence of depression. Similarly, Hvenegaard et al. reported that group rumination-focused CBT was effective in treating depression and specifically targeted maladaptive repetitive thinking styles (Hvenegaard et al., 2020). The present study extends these findings by showing that even a broader CBT protocol, rather than an intervention exclusively focused on rumination, can reduce repetitive negative thinking and related dimensions in patients with major depressive disorder.

The results are also in line with Chiang et al., who found that group rumination-focused CBT reduced depressive symptoms in individuals with schizophrenia (Chiang et al., 2025). Although the clinical population in that study differed from the present sample, the findings support the broader proposition that perseverative negative cognition is a modifiable process across psychiatric conditions. In a similar direction, Madani et al. showed that CBT was effective in reducing repetitive negative thoughts in patients

with diabetic neuropathic pain (Madani et al., 2025). The convergence of these findings suggests that repetitive negative thinking may function as a transdiagnostic process that responds to cognitive-behavioral techniques across different forms of psychological and medical distress. In the context of major depressive disorder, this responsiveness is particularly important because recurrent negative thoughts can maintain sadness, hopelessness, withdrawal, and diminished problem-solving ability.

The effectiveness of CBT observed in the present study is further supported by research on negative automatic thoughts. Buschmann et al. found that automatic thoughts and irrational beliefs significantly predicted symptoms of anxiety and depression, highlighting the central role of dysfunctional cognition in emotional disorders (Buschmann et al., 2018). Barzegari Khanga also reported that CBT reduced negative automatic thoughts and negative emotion in depressed women (Barzegari Khanga, 2024). These findings support the interpretation that CBT may reduce repetitive negative thinking by decreasing both the frequency and perceived credibility of negative automatic cognitions. Through repeated cognitive restructuring, patients learn to recognize that their initial interpretations are not necessarily accurate representations of reality. This process may weaken the habitual tendency to elaborate on negative thoughts, thereby reducing the persistence of self-critical, hopeless, or catastrophic thinking. The structured and skills-based nature of CBT may also provide patients with concrete strategies for interrupting repetitive cognitive cycles when they occur.

The significant reduction in negative self-concept and expectations following CBT is also understandable within cognitive theory. Depression is often associated with stable negative beliefs about personal worth, competence, and future outcomes. These beliefs bias the interpretation of everyday experiences and can lead individuals to selectively attend to failures while discounting positive information. Cognitive restructuring and behavioral experiments directly challenge such patterns by encouraging patients to test predictions, identify evidence inconsistent with negative beliefs, and develop more balanced self-appraisals. Freeman and Dozois emphasize that effective CBT integrates cognitive restructuring with behavioral procedures and ongoing assessment of belief change (Freeman & Dozois, 2024). Accordingly, improvements in negative self-concept and low self-confidence in the CBT group may reflect both changes in cognition and increased exposure to corrective behavioral experiences.

The present finding that schema therapy was also effective in reducing repetitive negative thinking is consistent with the conceptual framework of schema therapy, which emphasizes the role of enduring maladaptive schemas in psychological disorders. Early maladaptive schemas are broad, persistent cognitive-emotional structures that influence how individuals interpret themselves, others, and relationships. In depression, schemas related to defectiveness, failure, emotional deprivation, abandonment, social isolation, dependence, or unrelenting standards may repeatedly generate negative interpretations and emotional reactions. Schema therapy aims to weaken these maladaptive structures through cognitive, experiential, behavioral, and interpersonal techniques while strengthening healthier schemas and modes (Heath & Startup, 2022). Consequently, the reduction in repetitive negative thinking observed in the schema therapy group may reflect change at a deeper cognitive-emotional level than the modification of isolated automatic thoughts alone.

The schema therapy findings are consistent with Rezaei et al., who reported that emotional schema therapy significantly reduced depression severity and rumination in patients with major depression (Rezaei et al., 2016). This result is particularly relevant because rumination is closely related to repetitive negative thinking and often emerges when patients respond maladaptively to distressing emotional experiences. Schema-based interventions may reduce rumination by helping patients understand the origins and functions of their emotional responses, modify maladaptive beliefs about emotions, and develop more accepting and adaptive ways of processing distress. The present results therefore provide additional support for the usefulness of schema-oriented approaches in reducing perseverative cognitive processes associated with depression.

The greater effectiveness of schema therapy compared with CBT represents one of the most important findings of the present study. This result is consistent with evidence suggesting that schema therapy can produce substantial benefits in depressive disorders. Carter et al., in a randomized clinical trial comparing schema therapy and CBT for depression, found that both treatments were effective and demonstrated the viability of schema therapy as an intervention for depressive symptoms (Carter et al., 2013). More recently, Kopf Beck et al. compared schema therapy, CBT, and supportive therapy among patients with depression in inpatient and day-clinic settings and provided further evidence supporting the effectiveness of schema

therapy as a structured treatment for depression (Kopf Beck et al., 2024). Although comparative findings across studies may vary depending on patient characteristics, treatment intensity, and outcome measures, the present results suggest that schema therapy may offer particular advantages when the target outcome involves persistent and deeply rooted negative cognitions.

One possible explanation for the greater effect of schema therapy is that repetitive negative thinking may be generated by enduring cognitive-emotional patterns rather than only by situational automatic thoughts. In patients with major depressive disorder, recurrent cognitions such as “I am inadequate,” “I will always fail,” or “others will reject me” may reflect longstanding schemas rather than isolated distortions. Standard CBT can effectively challenge these thoughts and reduce their influence, but schema therapy explicitly explores their developmental origins, emotional significance, and relationship to unmet psychological needs. By combining cognitive restructuring with experiential methods, imagery, emotional processing, and work on interpersonal patterns, schema therapy may weaken the deeper structures that repeatedly produce negative thoughts. This may explain why the schema therapy group showed greater reductions in negative self-concept and low self-confidence.

The stronger effect of schema therapy on negative self-concept is theoretically plausible because schema therapy places substantial emphasis on persistent beliefs about defectiveness, shame, failure, and emotional deprivation. These schemas are closely related to negative self-evaluation and expectations regarding future relationships or achievements. When such schemas are activated, patients may engage in repetitive self-critical thinking and interpret ambiguous situations in schema-consistent ways. By identifying these schemas and challenging their emotional and cognitive foundations, schema therapy may provide patients with opportunities to develop more coherent and compassionate self-representations. Heath and Startup emphasize that schema therapy extends beyond traditional cognitive restructuring by integrating experiential techniques and mode-focused work to modify deeply rooted patterns (Heath & Startup, 2022). This broader therapeutic focus may account for the comparatively greater reduction in self-related repetitive cognition observed in the present study.

The difference between schema therapy and CBT in low self-confidence may also be explained by the role of corrective emotional experiences. CBT typically seeks to

improve confidence through evidence gathering, behavioral activation, problem solving, and restructuring of negative beliefs. Schema therapy, however, may additionally address the developmental experiences that shaped chronic feelings of inadequacy and self-doubt. Patients may learn to recognize internalized critical messages, distinguish maladaptive schema-driven responses from healthier self-evaluations, and practice more adaptive interpersonal and emotional responses. Through this process, improvements in self-confidence may be linked not merely to changing specific thoughts but also to changes in the patient's broader sense of identity and emotional needs.

The findings can also be understood in relation to the broader cognitive literature on depression. Nikhhah et al. found that mindfulness-based cognitive therapy reduced negative automatic thoughts in female students with depressive disorder (Nikhhah et al., 2020). Although mindfulness-based cognitive therapy differs from both CBT and schema therapy, its effectiveness supports the notion that changing the individual's relationship with negative thoughts is a central mechanism in reducing depressive cognition. Across cognitive, metacognitive, mindfulness-based, rumination-focused, and schema-based approaches, a common therapeutic goal is to reduce the automaticity, rigidity, and emotional impact of negative thought processes. The present findings suggest that both CBT and schema therapy can achieve this goal, but schema therapy may additionally modify the broader cognitive-emotional structures from which these thoughts emerge.

The results also have implications for understanding the persistence of depressive symptoms. Depression is often recurrent, and residual cognitive symptoms may increase vulnerability to future episodes. Samaei and Besharat's review of the historical and conceptual development of depressive disorders highlights the complexity and multidimensional nature of depression (Samaei & Besharat, 2023). Likewise, contemporary biological perspectives suggest that MDD reflects interactions among neurobiological, inflammatory, psychological, and environmental mechanisms (Jiao, 2025). Psychological interventions do not directly target all such mechanisms, but reducing repetitive negative thinking may interrupt an important cognitive pathway through which stress and negative affect become prolonged. When patients repeatedly focus on perceived failures, threats, or negative self-judgments, emotional distress may become more persistent and opportunities for adaptive behavior may diminish. Therefore, interventions that effectively reduce repetitive

negative thinking may contribute not only to immediate symptom relief but also potentially to improved long-term emotional regulation.

The present findings also reinforce the importance of providing structured psychological treatment rather than relying solely on routine or nonspecific care. Kolovos et al. showed that treatment as usual can produce improvement in major depressive disorder, but outcomes vary considerably and may not address specific maintaining mechanisms (Kolovos et al., 2017). The current results indicate that targeted interventions focused on maladaptive cognitive processes can produce marked changes in repetitive negative thinking. This may be particularly relevant in clinical settings where patients continue to experience persistent negative cognition despite general supportive treatment. The comparatively greater effect of schema therapy suggests that patients with entrenched negative self-beliefs or longstanding cognitive patterns may benefit from interventions that explicitly address schema-level mechanisms.

The effectiveness of CBT in this study is also consistent with the broader evidence base for cognitive-behavioral approaches across psychiatric problems. De Arellano et al. documented substantial support for trauma-focused CBT in children and adolescents exposed to trauma (De Arellano et al., 2014). Although trauma-related disorders differ from major depressive disorder, the evidence illustrates the adaptability of cognitive-behavioral principles for modifying maladaptive interpretations, avoidance, and emotional responses. Such findings support the broader theoretical assumption that structured cognitive and behavioral interventions can alter psychological mechanisms underlying distress. In the present study, these mechanisms appeared to include repetitive negative thinking, self-critical cognition, and diminished confidence.

Taken together, the findings demonstrate that both CBT and schema therapy can substantially reduce repetitive negative thinking in patients with major depressive disorder, but schema therapy may provide greater benefit when maladaptive cognition is deeply integrated with self-concept and longstanding schemas. The differences observed across total repetitive negative thinking, personal maladjustment and desire for change, negative self-concept and expectations, and low self-confidence suggest that the type of psychotherapy matters not only for general symptom change but also for specific cognitive outcomes. The results therefore support the use of cognitive-based psychotherapies as mechanism-focused interventions in major depressive

disorder and suggest that schema therapy may be particularly useful when treatment targets include persistent negative self-representations and recurrent maladaptive cognitive patterns.

Several limitations should be considered when interpreting the findings. First, the sample consisted of only 45 patients recruited through convenience sampling from counseling and psychotherapy centers in Ilam, which may restrict the generalizability of the results to other populations, geographical regions, age groups, and clinical settings. Second, the relatively small group sizes may have limited statistical power for detecting more subtle differences between the two active treatments. Third, the study relied primarily on self-report measures of depressive symptoms and repetitive negative thinking, which may be affected by response tendencies, social desirability, recall bias, or temporary mood states. Fourth, although participants were randomly assigned to the three conditions after recruitment, the study was quasi-experimental because participants were initially selected through nonprobability sampling. Fifth, therapist-related variables such as therapist competence, adherence to the intervention manuals, therapeutic alliance, and potential therapist effects were not examined separately. Sixth, the present design focused primarily on pretest and posttest changes and therefore provides limited information about the long-term maintenance of treatment gains. Finally, potentially relevant variables such as duration and number of previous depressive episodes, severity of early maladaptive schemas, stressful life events, family support, socioeconomic status, and comorbid anxiety symptoms were not included as moderators or covariates.

Future studies should replicate these findings with larger samples recruited from multiple clinical centers and different regions to improve statistical power and external validity. Randomized controlled trials with concealed allocation and independent outcome assessment would provide stronger evidence regarding comparative efficacy. Future research should also incorporate follow-up assessments over several months or longer to determine whether the observed differences between CBT and schema therapy remain stable over time and whether either approach is associated with lower relapse rates. It would also be useful to examine potential mediators of treatment response, including changes in early maladaptive schemas, rumination, cognitive flexibility, emotion regulation, self-compassion, and behavioral activation. Researchers could investigate whether baseline schema severity, chronicity of

depression, age at onset, number of previous episodes, or comorbid anxiety moderates the relative effectiveness of the two treatments. Including clinician-rated outcomes, behavioral measures, ecological momentary assessment, and process measures alongside self-report instruments could further strengthen future research. Comparative studies of individual versus group formats and studies examining integrated CBT–schema therapy protocols may also clarify whether combining the strengths of both approaches produces additional clinical benefit.

The findings suggest that both CBT and schema therapy can be incorporated into psychological services for patients with major depressive disorder who experience persistent repetitive negative thinking. Clinicians may use CBT when patients require a structured, present-focused intervention emphasizing identification of automatic thoughts, cognitive restructuring, behavioral activation, problem solving, and development of practical coping skills. Schema therapy may be particularly useful for patients whose negative thoughts are chronic, recurrent, strongly linked to shame, defectiveness, failure, emotional deprivation, or low self-worth, or who have responded incompletely to more symptom-focused interventions. Routine assessment of repetitive negative thinking and its components can help therapists identify the most prominent cognitive targets and monitor treatment progress. Mental health centers may also benefit from training clinicians in both approaches so that treatment can be tailored according to the depth, chronicity, and functional characteristics of patients' maladaptive cognitive patterns. Where appropriate, clinicians may consider integrating cognitive-behavioral techniques with schema-focused interventions to address both current automatic thoughts and the more enduring cognitive-emotional structures that generate them.

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

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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 interview and participated in the research with informed consent.

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