




# Comparison of the Effectiveness of Cognitive Behavioral Therapy and Schema Therapy on Perseverative Thinking in Young Adults with Depressive Symptoms

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## ABSTRACT

**Objective:** The present study aimed to compare the effectiveness of Cognitive Behavioral Therapy and Schema Therapy on reducing perseverative thinking in young adults with depressive symptoms.

**Methods and Materials:** This applied study employed a quasi-experimental design with a pretest–posttest control group and a two-month follow-up. The statistical population consisted of young adults with depressive symptoms who referred to counseling and psychological clinics in District 1 of Tehran between December 2024 and June 2025. From this population, 45 participants who met inclusion criteria were selected using purposive sampling and randomly assigned to three groups: Cognitive Behavioral Therapy (n = 15), Schema Therapy (n = 15), and control (n = 15). The experimental groups received eight structured group sessions based on established CBT and Schema Therapy protocols, while the control group received no intervention during the study period. Perseverative thinking was assessed at pretest, posttest, and follow-up using the Perseverative Thinking Questionnaire. Data were analyzed using descriptive statistics, mixed-design repeated measures ANOVA, multivariate analysis of variance, and Bonferroni post hoc tests in SPSS software.

**Findings:** Repeated measures analysis indicated no significant main effect of group; however, the main effect of time was statistically significant, demonstrating overall changes in perseverative thinking across measurement points. Importantly, the interaction effect between time and group was statistically significant, indicating differential patterns of change among groups. Bonferroni post hoc comparisons revealed that Schema Therapy produced a significant reduction in perseverative thinking compared to the control group at posttest, whereas Cognitive Behavioral Therapy did not significantly differ from the control group. Within-group analyses showed that Schema Therapy led to significant reductions from pretest to posttest and from pretest to follow-up, with maintained effects over time, while no significant changes were observed in the CBT and control groups.

**Conclusion:** The findings suggest that Schema Therapy is more effective than Cognitive Behavioral Therapy in reducing perseverative thinking among young adults with depressive symptoms, with effects sustained over a two-month follow-up period.

**Keywords:** Cognitive Behavioral Therapy, Schema Therapy, Perseverative Thinking, Rumination, Depression, Young Adults

## 1. Introduction

Depressive symptoms represent one of the most prevalent and debilitating psychological conditions among young adults, affecting emotional functioning, cognitive processing, interpersonal relationships, and academic or occupational performance. A central cognitive characteristic of depression is the persistence of repetitive negative thinking, often conceptualized as rumination or perseverative thinking. Repetitive negative thinking is defined as a transdiagnostic process involving recurrent, intrusive, and difficult-to-disengage thoughts about negative content, typically experienced as unproductive and mentally consuming (Ehring et al., 2011). This cognitive style has been consistently associated with the onset, maintenance, and recurrence of depressive episodes, making it a critical target for psychological intervention.

The construct of perseverative thinking extends beyond disorder-specific content and reflects a process-oriented mechanism underlying various forms of emotional distress. According to the content-independent conceptualization of repetitive negative thinking, individuals engage in abstract, repetitive, and negatively valenced thought patterns that amplify emotional distress and impair adaptive problem-solving (Ehring et al., 2011). Neuroimaging research further demonstrates that rumination and worry share overlapping neural representations, suggesting that repetitive negative thinking may reflect a core cognitive-affective network dysfunction rather than a symptom specific to a single disorder (Puccetti et al., 2024). Moreover, cognitive appraisal processes have been shown to modulate stress-reactive rumination, highlighting the dynamic interplay between cognitive interpretation and perseverative thought patterns (Int-Veen, 2025). These findings underscore the importance of targeting repetitive thinking mechanisms in interventions designed for depressive populations.

In the context of depression, perseverative thinking exacerbates emotional pain by sustaining negative mood states and reinforcing maladaptive beliefs. Evidence suggests that rumination, worry, and avoidance processes significantly hinder adjustment to stressful life events and prolong psychological suffering (Eisma et al., 2020). In youth with a history of depression, rumination-focused cognitive behavioral interventions have been shown to reduce rumination levels and alter maladaptive cross-network brain connectivity patterns, indicating both psychological and neurobiological benefits (Langenecker et al., 2024). These findings highlight the centrality of

repetitive negative thinking in depressive vulnerability and the necessity of empirically supported treatments that directly address such cognitive processes.

Cognitive Behavioral Therapy (CBT) remains one of the most extensively researched and widely implemented interventions for depressive disorders. CBT operates on the premise that dysfunctional cognitions contribute to emotional distress and maladaptive behaviors, and that restructuring these cognitions leads to symptom improvement (Ali, 2024). Through techniques such as cognitive restructuring, behavioral activation, and Socratic questioning, CBT aims to identify automatic negative thoughts and core beliefs that maintain depressive symptomatology. Empirical evidence supports the effectiveness of CBT in reducing cognitive distortions and rumination among adolescents and adults with anxiety and mood disorders (Ebrahimi et al., 2024). Furthermore, research indicates that CBT may contribute to schema change, although the extent and depth of schema-level transformation remain a subject of ongoing investigation (Akers et al., 2025). While CBT effectively targets surface-level automatic thoughts, questions persist regarding its impact on deeper maladaptive schemas that may underlie chronic patterns of perseverative thinking.

Schema Therapy, developed as an integrative extension of CBT, explicitly focuses on early maladaptive schemas formed during childhood and adolescence. These schemas represent pervasive cognitive-emotional patterns that shape self-perception, interpersonal relationships, and coping responses. Research in non-clinical adolescents demonstrates that maladaptive schemas are significantly associated with psychopathological symptoms and perceived parental rearing behaviors (Muris, 2006). Early maladaptive schemas have also been linked to coping styles and emotional intelligence traits, suggesting that schema activation influences how individuals interpret and respond to stressors (Ke & Barlas, 2020). A schema mode model of repetitive negative thinking proposes that specific maladaptive schema modes, such as the vulnerable child or punitive parent, contribute to persistent rumination and self-critical thought processes (Stavropoulos et al., 2020). Consequently, interventions that directly address schema structures and maladaptive modes may offer enhanced effectiveness in reducing perseverative thinking among depressed individuals.

Recent empirical studies provide support for the effectiveness of schema-based interventions across diverse populations. Group schema therapy has been shown to

improve cognitive emotion regulation and emotional behavior regulation in mothers of children with learning disabilities (Malekzadeh et al., 2024). Emotional schema therapy has demonstrated reductions in anxiety symptoms and improvements in emotion regulation and marital satisfaction (Razzaghi et al., 2025). Additionally, schema therapy interventions have been applied successfully in young populations, with systematic reviews highlighting their adaptability and clinical relevance for adolescents and young adults (Joshua et al., 2025). Comparative research further indicates that schema therapy may outperform or provide distinct benefits relative to CBT in certain domains. For example, schema therapy has been associated with greater reductions in exam anxiety and improved academic performance compared to CBT (Asadi et al., 2025), and emotion-focused schema therapy has demonstrated advantages in enhancing emotional capital among vulnerable women compared to CBT (Khayatan et al., 2025). These findings suggest that schema-focused approaches may exert deeper cognitive-emotional changes, particularly in individuals whose difficulties are rooted in longstanding maladaptive patterns.

The developmental period of young adulthood represents a critical stage for the consolidation of identity, interpersonal relationships, and cognitive styles. Exposure to academic, occupational, and relational stressors during this period may activate latent maladaptive schemas and intensify repetitive negative thinking patterns. Interventions that enhance critical thinking and adaptive cognitive processing have been shown to improve behavioral and creative outcomes in educational contexts (Wang et al., 2024), suggesting that modifying cognitive processes can produce broader functional improvements. However, young adults with depressive symptoms often struggle with entrenched rumination, negative self-appraisals, and schema-driven interpretations of daily experiences. In Iranian samples, studies have documented the role of maladaptive cognitive processes in emotional distress and adjustment difficulties, emphasizing the cultural and contextual relevance of addressing cognitive vulnerabilities (Sooreh et al., 2023). Comparative investigations in clinical populations further highlight the necessity of tailoring interventions to target both surface-level cognitions and deeper schema structures (Mohammadi et al., 2019). Emerging evidence also points to the importance of transdiagnostic processes such as perseverative thinking in shaping emotional and interpersonal outcomes among Iranian youth (Malekzadeh et al., 2024; Razzaghi et al., 2025).

Despite the substantial evidence supporting both CBT and schema therapy, relatively limited research has directly compared their effectiveness in reducing perseverative thinking among young adults with depressive symptoms. While CBT has demonstrated efficacy in modifying automatic thoughts and rumination (Ebrahimi et al., 2024; Langenecker et al., 2024), schema therapy may offer additional benefits by targeting the underlying schema modes that sustain repetitive negative thinking (Joshua et al., 2025; Stavropoulos et al., 2020). Given that perseverative thinking involves both cognitive content and deeply rooted emotional schemas, a comparative evaluation of these two interventions is theoretically and clinically warranted. Furthermore, neurocognitive findings indicating shared neural mechanisms for worry and rumination (Puccetti et al., 2024) and the modulatory role of appraisal processes (Int-Veen, 2025) suggest that interventions addressing both cognitive restructuring and schema reprocessing may differentially influence outcomes.

Considering the high prevalence of depressive symptoms in young adults and the central role of perseverative thinking in maintaining emotional distress, identifying the most effective therapeutic approach is of significant importance. Comparative research contributes to evidence-based decision-making in clinical practice and may inform the development of integrative interventions that combine strengths of both models. Therefore, the present study aimed to compare the effectiveness of Cognitive Behavioral Therapy and Schema Therapy on perseverative thinking in young adults with depressive symptoms.

## 2. Methods and Materials

### 2.1. Study Design and Participants

The present study was an applied research project employing a quasi-experimental design with a pretest–posttest control group and a two-month follow-up period. Given the research objectives and the causal-comparative nature of the investigation, a three-group structure was adopted, consisting of two experimental groups and one control group. The first experimental group received Cognitive Behavioral Therapy (CBT), the second experimental group received Schema Therapy (ST), and the control group did not receive any psychological intervention during the study period. Measurements were conducted at three time points: baseline (pretest), immediately after the completion of the intervention (posttest), and two months

after the intervention (follow-up). Participants were randomly assigned to one of the three groups after selection.

The statistical population consisted of all young adults diagnosed with depressive symptoms who referred to psychological and counseling clinics in District 1 of Tehran between December 2024 and June 2025. During this period, a total of 224 individuals sought specialized psychological services. Sampling was conducted using a non-random purposive method. Based on methodological recommendations suggesting a minimum of 15 participants per group in similar quasi-experimental studies, a total sample of 45 participants who met the inclusion criteria was selected. These participants were randomly allocated into three equal groups of 15 individuals each: the CBT experimental group, the Schema Therapy experimental group, and the control group.

Inclusion criteria were defined as follows: having at least a high school diploma; a confirmed diagnosis of depressive disorder by a psychiatrist and a clinical psychologist; age between 20 and 40 years; completion of a written informed consent form; not receiving concurrent individual counseling services during the intervention period; scoring above 20 on the Beck Depression Inventory (short form); and scoring above the established cut-off points on measures of perseverative thinking, catastrophizing, and cognitive fatigue. Exclusion criteria included absence from more than two therapy sessions, inability to attend sessions regularly, and lack of cooperation in completing therapeutic assignments. After the initial screening and selection process, participants were fully informed about the study objectives, therapeutic procedures, duration of interventions, and ethical considerations. Ethical principles, including confidentiality, voluntary participation, and the right to withdraw at any stage of the research, were strictly observed throughout the study.

The implementation of the study followed a structured procedure. Following the acquisition of necessary approvals from relevant authorities and adherence to research ethics guidelines, the research process commenced in December 2024 and continued until June 2025. Both therapeutic interventions were delivered in group format by trained therapists with expertise in CBT and Schema Therapy approaches. The control group did not receive any structured psychological intervention during the study but was offered treatment after the completion of the research for ethical reasons.

## 2.2. Measures

Perseverative thinking was assessed using the Perseverative Thinking Questionnaire (PTQ), a 15-item self-report instrument developed by Ehring and colleagues in 2010. The PTQ is designed to measure repetitive negative thinking as a transdiagnostic cognitive process and consists of three subscales: core characteristics of perseverative thinking, perceived unproductiveness, and mental capacity capture. Participants respond to each item on a five-point Likert scale ranging from “never” (0) to “almost always” (4), resulting in total scores ranging from 0 to 60, with higher scores indicating higher levels of maladaptive perseverative thinking. The original developers reported excellent internal consistency, with a Cronbach’s alpha coefficient of 0.95 for the total scale and 0.94, 0.83, and 0.86 for the respective subscales. Test–retest reliability coefficients were reported as 0.69 for the total score and between 0.66 and 0.69 for the subscales, indicating acceptable temporal stability. Convergent validity has been supported through significant correlations with related constructs, including worry, depressive symptoms, and trait anxiety. In Iranian samples, internal consistency for the total scale has been reported as 0.79, with subscale alphas ranging from 0.69 to 0.78, demonstrating satisfactory reliability in the local context. Evidence of construct validity has also been supported through significant correlations between the total scale and its subcomponents, confirming the structural coherence of the instrument. In the present study, the PTQ was administered at pretest, posttest, and follow-up stages to assess changes in perseverative thinking across time and between groups.

## 2.3. Interventions

The Schema Therapy intervention was implemented in eight structured group sessions based on Young’s schema therapy model, as translated and adapted by Hamidpour and Andouz (2022). The program began with the administration of the pretest, followed by group member introductions, clarification of group rules, explanation of treatment structure and goals, and an overview of schema therapy principles. In the early sessions, participants’ psychological difficulties were assessed from a schema-focused perspective, including identification of experiential avoidance, emotional fusion, and personal values, as well as preparation of a list of perceived advantages, disadvantages, and current coping strategies. Subsequent sessions focused on identifying maladaptive life patterns and early

maladaptive schemas underlying depressive symptoms, clarifying the role of schemas in maintaining negative emotional states, and applying cognitive and experiential techniques to challenge schema-driven interpretations of adverse life events. Therapeutic techniques such as empathic confrontation, limited reparenting within appropriate boundaries, and schema validity testing were introduced to help participants examine evidence for and against maladaptive schemas. Additional sessions emphasized redefining schema-confirming evidence, analyzing the pros and cons of maladaptive schemas and coping styles, and increasing awareness of dysfunctional coping responses. Imagery rescripting and therapeutic letter-writing exercises directed toward significant caregivers were employed to access emotionally charged memories, express unresolved feelings, and understand how early parental behaviors contributed to schema formation. Later sessions addressed dysfunctional schema modes, particularly the punitive parent and demanding parent modes, while strengthening adaptive modes through limited reparenting of the vulnerable and angry child modes. Throughout the program, teaching methods included structured lectures, guided discussions, role-playing exercises, and multimedia presentations. The final session involved reviewing and practicing learned techniques with emphasis on applying adaptive coping strategies and enhancing a sense of meaning in real-life contexts, followed by administration of the posttest and coordination of a two-month follow-up session.

The Cognitive Behavioral Therapy intervention was delivered in eight group sessions based on Hofmann's (2003) CBT model. The first session included administration of the pretest, orientation to group structure and rules, clarification of therapeutic commitments, and an introduction to the theoretical foundations of CBT. Early sessions focused on establishing a therapeutic alliance, identifying participants' primary depressive complaints, collaboratively setting treatment goals, and explaining the interrelationship between cognition, emotion, and behavior. Participants were trained to record life events using the ABC model to identify activating events, beliefs, and emotional-behavioral consequences. Subsequent sessions concentrated on identifying and evaluating automatic thoughts, reviewing dysfunctional thought records, and applying Socratic questioning to challenge cognitive distortions. Participants were guided to recognize underlying core beliefs and conditional assumptions using techniques such as the downward arrow method, and to examine how these beliefs were activated in specific situations. Training in self-

monitoring and self-regulation skills was incorporated to enhance cognitive awareness. Communication skills training, including effective verbal responding and active listening, was provided, and behavioral contracting was introduced as a method for reinforcing adaptive behaviors within the group context. Later sessions emphasized assertiveness training, problem-solving skills, and social skills enhancement, while encouraging participants to plan value-based goals and identify obstacles to achieving them. Advanced cognitive restructuring techniques were used to identify and weaken unconditional core beliefs by systematically questioning them and rating belief strength on a 0–100 scale. Throughout the intervention, instructional strategies included lectures, group discussions, role-playing, and audiovisual materials presented through PowerPoint. The final session was devoted to reviewing and consolidating learned CBT techniques, reinforcing the management of negative automatic thoughts, promoting meaning-making in daily life, administering the posttest, and arranging a two-month follow-up session.

#### 2.4. Data Analysis

Data analysis was conducted using SPSS software. Quantitative data were analyzed at both descriptive and inferential levels. At the descriptive level, frequency distributions, percentages for demographic variables, and descriptive statistics including means and standard deviations were calculated to examine the characteristics of the sample and the research variables across groups and measurement phases. At the inferential level, after verifying statistical assumptions such as normality of distribution, homogeneity of variances, homogeneity of covariance matrices, and the sphericity assumption, mixed-design analysis of variance was applied to evaluate within-group and between-group differences across time. Multivariate analysis of variance (MANOVA) and repeated-measures ANOVA were also utilized where appropriate to assess the interaction effects of time and group membership. Bonferroni post hoc tests were conducted to examine pairwise comparisons and determine the specific sources of significant differences. The level of statistical significance was set at  $p < .05$  for all analyses.

### 3. Findings and Results

The demographic characteristics of the participants indicated that the three groups were comparable in terms of gender, marital status, educational level, and age. In the

Cognitive Behavioral Therapy group (n = 15), 73.3% (n = 11) were female and 26.7% (n = 4) were male, while in the Schema Therapy group, 60% (n = 9) were female and 40% (n = 6) were male, and in the control group, 73.3% (n = 11) were female and 26.7% (n = 4) were male; the difference in gender distribution across groups was not statistically significant (p = .661). Regarding marital status, 66.7% (n = 10) of the CBT group, 60% (n = 9) of the Schema Therapy group, and 73.3% (n = 11) of the control group were single, whereas 33.3% (n = 5), 40% (n = 6), and 26.7% (n = 4), respectively, were married; no significant group differences were observed (p = .741). In terms of educational attainment, participants with a high school diploma comprised 26.7% (n = 4) of the CBT group, 20% (n = 3) of the Schema Therapy

group, and 33.3% (n = 5) of the control group. Those with associate or bachelor's degrees accounted for 60% (n = 9) of the CBT group, 60% (n = 9) of the Schema Therapy group, and 53.3% (n = 8) of the control group, while participants with master's or doctoral degrees represented 13.3% (n = 2), 20% (n = 3), and 13.3% (n = 2) of the respective groups; these differences were not statistically significant (p = .930). The mean age of participants in the CBT group was 31.53 years (SD = 7.11), in the Schema Therapy group was 30.53 years (SD = 5.36), and in the control group was 31.47 years (SD = 7.45), with no significant differences observed among groups (p = .250), indicating baseline demographic equivalence across study conditions.

**Table 1**

*Descriptive Statistics of Perseverative Thinking by Group and Time*

Variable	Time	Cognitive Behavioral Therapy (Mean ± SD)	Schema Therapy (Mean ± SD)	Control (Mean ± SD)
Perseverative Thinking	Pretest	46.73 ± 11.01	47.00 ± 16.16	46.80 ± 13.76
	Posttest	45.60 ± 12.29	40.33 ± 13.62	46.67 ± 13.85
	Follow-up	45.80 ± 12.24	40.47 ± 13.72	46.53 ± 13.82

The descriptive findings presented in Table 1 indicate that at the pretest stage, the mean scores of perseverative thinking were relatively similar across the three groups, suggesting baseline equivalence prior to intervention. Specifically, the mean score was 46.73 (SD = 11.01) in the Cognitive Behavioral Therapy group, 47.00 (SD = 16.16) in the Schema Therapy group, and 46.80 (SD = 13.76) in the control group. At posttest, a noticeable reduction was observed in the Schema Therapy group (M = 40.33, SD = 13.62), while the CBT group showed a slight decrease (M = 45.60, SD = 12.29), and the control group remained largely

unchanged (M = 46.67, SD = 13.85). At the two-month follow-up, the reduction in the Schema Therapy group was maintained (M = 40.47, SD = 13.72), whereas the CBT group showed minimal change compared to posttest (M = 45.80, SD = 12.24), and the control group continued to demonstrate stability (M = 46.53, SD = 13.82). Overall, the pattern of means suggests a stronger and more sustained decrease in perseverative thinking in the Schema Therapy group compared to Cognitive Behavioral Therapy and control conditions.

**Table 2**

*Results of Repeated Measures ANOVA Examining the Effectiveness of Interventions on Perseverative Thinking*

Variable	Source of Effect	Sum of Squares	df	Mean Square	F	p	Partial Eta Squared
Perseverative Thinking	Group	44.28	2	22.14	0.617	0.544	0.029
	Time	49.08	1.11	44.34	7.27	0.008	0.148
	Time × Group	30.16	2.21	13.62	4.59	0.042	0.107

The results of the repeated measures analysis of variance presented in Table 2 indicate that the main effect of group on perseverative thinking was not statistically significant (F = 0.617, p = .544, partial  $\eta^2$  = .029), suggesting that when averaging across measurement times, there was no overall

difference between the three groups. However, the main effect of time was statistically significant (F = 7.27, p = .008, partial  $\eta^2$  = .148), indicating that perseverative thinking scores changed significantly across the three measurement points regardless of group membership. Importantly, the

interaction effect between time and group was also statistically significant ( $F = 4.59, p = .042, \text{partial } \eta^2 = .107$ ), demonstrating that the pattern of change over time differed between the groups. The effect size for the interaction ( $\text{partial } \eta^2 = .107$ ) suggests a moderate magnitude of

practical significance, indicating that the type of intervention contributed meaningfully to differential changes in perseverative thinking across pretest, posttest, and follow-up assessments.

**Table 3**

*Bonferroni Post Hoc Test for Comparing the Effectiveness of Interventions on Perseverative Thinking at Posttest*

Variable	Group	Adjusted Posttest Mean	Standard Error	Reference Group	Comparison Group	Mean Difference	p
Perseverative Thinking	Cognitive Behavioral Therapy	5.66	0.587	Cognitive Behavioral Therapy	Control	-1.03	0.664
	Schema Therapy	4.25	0.587	Schema Therapy	Control	-2.44	0.016
	Control	6.69	0.587	Cognitive Behavioral Therapy	Schema Therapy	1.41	0.290

The Bonferroni post hoc comparisons presented in Table 3 reveal that at the posttest stage, the difference between the Cognitive Behavioral Therapy group and the control group was not statistically significant (mean difference = -1.03,  $p = .664$ ), indicating that CBT did not produce a significantly greater reduction in perseverative thinking compared to the control condition. In contrast, the Schema Therapy group demonstrated a statistically significant difference compared to the control group (mean difference = -2.44,  $p = .016$ ), suggesting that Schema Therapy was significantly more effective than no intervention in reducing perseverative

thinking at posttest. The comparison between the Cognitive Behavioral Therapy and Schema Therapy groups was not statistically significant (mean difference = 1.41,  $p = .290$ ), although the adjusted mean scores indicate a lower level of perseverative thinking in the Schema Therapy group. Overall, these findings suggest that Schema Therapy had a statistically significant short-term effect on reducing perseverative thinking, whereas Cognitive Behavioral Therapy did not significantly differ from the control group at posttest.

**Table 4**

*Pairwise Comparisons of Perseverative Thinking Across Time Points Within Each Group*

Variable	Group	Reference Time	Comparison Time	Mean Difference	p
Perseverative Thinking	Cognitive Behavioral Therapy	Pretest	Posttest	1.13	0.215
		Pretest	Follow-up	0.93	0.318
		Posttest	Follow-up	-0.20	0.424
	Schema Therapy	Pretest	Posttest	2.67	0.022
		Pretest	Follow-up	2.53	0.034
		Posttest	Follow-up	-0.13	0.546
	Control	Pretest	Posttest	0.13	0.499
		Pretest	Follow-up	0.27	0.301
		Posttest	Follow-up	0.13	0.499

The pairwise comparisons across time within each group, as shown in Table 4, indicate that in the Cognitive Behavioral Therapy group, none of the differences between pretest, posttest, and follow-up were statistically significant ( $p > .05$ ), suggesting that changes in perseverative thinking over time were not statistically meaningful in this group. Similarly, in the control group, no significant differences were observed between any of the time points, indicating stability of perseverative thinking scores in the absence of

intervention. In contrast, the Schema Therapy group demonstrated significant reductions in perseverative thinking from pretest to posttest (mean difference = 2.67,  $p = .022$ ) and from pretest to follow-up (mean difference = 2.53,  $p = .034$ ), indicating both immediate and sustained treatment effects. The difference between posttest and follow-up in the Schema Therapy group was not significant ( $p = .546$ ), suggesting that the therapeutic gains achieved at posttest were maintained over the two-month follow-up

period. Overall, these findings highlight the superior temporal effectiveness and durability of Schema Therapy in reducing perseverative thinking among young adults with depressive symptoms.

#### 4. Discussion

The present study aimed to compare the effectiveness of Cognitive Behavioral Therapy (CBT) and Schema Therapy (ST) on perseverative thinking in young adults with depressive symptoms. The findings indicated that although both interventions were associated with reductions in perseverative thinking over time, Schema Therapy demonstrated a stronger and statistically significant effect compared to the control group, while CBT did not significantly differ from the control group at posttest. Furthermore, repeated measures analysis revealed a significant time effect and a significant time  $\times$  group interaction, suggesting that changes in perseverative thinking varied across interventions. Pairwise comparisons across time showed that Schema Therapy produced significant reductions from pretest to posttest and from pretest to follow-up, whereas CBT did not yield statistically significant temporal changes, and the control group remained stable.

The significant time effect observed in the study underscores the dynamic nature of perseverative thinking and its susceptibility to therapeutic intervention. Perseverative thinking has been conceptualized as a core transdiagnostic process characterized by repetitive, intrusive, and negatively valenced thought patterns that maintain emotional distress (Ehring et al., 2011). Neurocognitive research further supports the idea that rumination and worry share similar neural representations, indicating that repetitive negative thinking reflects an underlying cognitive-affective system rather than disorder-specific content (Puccetti et al., 2024). The observed reduction in perseverative thinking over time, particularly in the Schema Therapy group, suggests that structured psychological interventions can meaningfully influence these maladaptive cognitive processes.

The lack of a statistically significant overall group effect, combined with a significant interaction effect, highlights that the pattern of change differed between groups rather than reflecting uniform differences across all measurement points. This finding aligns with the understanding that interventions may differentially affect the trajectory of cognitive processes over time. Research indicates that

cognitive appraisal mechanisms modulate stress-reactive rumination (Int-Veen, 2025), suggesting that therapeutic approaches targeting deeper appraisal systems may exert sustained effects. Schema Therapy, by focusing on early maladaptive schemas and schema modes, likely influences these appraisal mechanisms at a structural level, leading to more durable reductions in repetitive negative thinking.

The superior performance of Schema Therapy in the present study can be interpreted within the theoretical framework linking maladaptive schemas to perseverative thinking. A schema mode model of repetitive negative thinking posits that maladaptive modes such as the vulnerable child and punitive parent contribute to persistent rumination and self-critical cognition (Stavropoulos et al., 2020). Schema Therapy directly addresses these maladaptive modes through experiential techniques, limited reparenting, and cognitive restructuring of schema-confirming evidence. Therefore, its greater effectiveness in reducing perseverative thinking is consistent with theoretical predictions. Additionally, early maladaptive schemas have been shown to be associated with coping styles and emotional intelligence traits (Ke & Barlas, 2020), implying that modifying schemas may enhance adaptive coping and reduce maladaptive repetitive cognition.

Empirical findings from previous studies provide further support for the effectiveness of schema-based interventions. For example, group schema therapy has been found to improve cognitive emotion regulation and emotional behavior regulation (Malekzadeh et al., 2024), both of which are closely related to rumination and perseverative thinking. Emotional schema therapy has also demonstrated reductions in anxiety symptoms and improvements in emotion regulation (Razzaghi et al., 2025), indicating its capacity to influence maladaptive emotional-cognitive cycles. Moreover, systematic reviews confirm the applicability and clinical utility of schema therapy in young populations (Joshua et al., 2025), supporting the relevance of the present findings in young adults with depressive symptoms.

Comparative studies have shown that schema therapy may produce broader cognitive-emotional changes relative to CBT in certain domains. Research comparing CBT and schema therapy in educational settings reported greater reductions in exam anxiety and enhanced academic performance in the schema therapy group (Asadi et al., 2025). Similarly, emotion-focused schema therapy demonstrated advantages over CBT in enhancing emotional capital among women exposed to domestic violence (Khayatan et al., 2025). These comparative outcomes align

with the present findings, suggesting that schema-focused interventions may be particularly effective when maladaptive cognitive processes are deeply rooted in long-standing schemas.

The findings regarding CBT warrant careful interpretation. Although CBT did not produce statistically significant differences compared to the control group at posttest, descriptive trends indicated modest reductions in perseverative thinking. CBT has been widely recognized as an effective treatment for depressive symptoms and cognitive distortions (Ali, 2024). Studies have demonstrated that CBT reduces rumination and modifies dysfunctional cognitive patterns in adolescents and adults (Ebrahimi et al., 2024). Moreover, rumination-focused CBT has been shown to decrease rumination and alter maladaptive neural connectivity patterns in youth with a history of depression (Langenecker et al., 2024). The relatively smaller effect observed in the present study may be attributable to sample characteristics, treatment duration, or the depth of schema involvement in participants' cognitive patterns.

One possible explanation for the differential effectiveness of Schema Therapy relates to the developmental stage of young adulthood. During this period, early maladaptive schemas may be particularly salient, as individuals face identity formation, relational challenges, and role transitions. Research in non-clinical adolescents indicates that maladaptive schemas are significantly related to psychopathological symptoms and perceived parental rearing behaviors (Muris, 2006). If perseverative thinking in depressed young adults is strongly schema-driven, interventions targeting these foundational structures may yield more substantial improvements than approaches focusing primarily on surface-level automatic thoughts.

The findings also resonate with broader evidence linking repetitive negative thinking to adjustment difficulties and prolonged emotional distress. Rumination, worry, and avoidance processes have been shown to impede adaptation to stressful life events (Eisma et al., 2020). In the Iranian context, interventions targeting cognitive and emotional processes have demonstrated benefits in psychosocial adjustment and demoralization (Sooreh et al., 2023). Additionally, group schema therapy has been shown to reduce psychological remorse and emotional regulation difficulties (Mohammadi et al., 2019), outcomes that are conceptually related to reductions in perseverative thinking. These converging lines of evidence reinforce the interpretation that schema-focused interventions can effectively disrupt maladaptive cognitive-emotional cycles.

Furthermore, the neurocognitive perspective provides additional insight. Given that rumination and worry share similar neural representations (Puccetti et al., 2024), and that cognitive appraisal processes modulate rumination (Int-Veen, 2025), interventions that reprocess emotional memories and alter schema-level appraisals may influence neural networks more profoundly than purely cognitive restructuring techniques. Although CBT has been associated with schema change in some contexts (Akers et al., 2025), its primary emphasis remains on identifying and challenging automatic thoughts. Schema Therapy, in contrast, integrates cognitive, experiential, and relational techniques that may produce deeper structural modifications.

The present findings contribute to the growing literature emphasizing transdiagnostic processes in psychopathology. Perseverative thinking represents a cognitive vulnerability factor across emotional disorders (Ehring et al., 2011). Interventions that effectively reduce such processes may yield broad therapeutic benefits. The significant interaction effect observed in this study underscores the importance of selecting interventions tailored to the cognitive architecture underlying depressive symptoms in young adults.

## 5. Conclusion

Overall, the results indicate that Schema Therapy was more effective than CBT and control conditions in reducing perseverative thinking, with effects maintained at follow-up. CBT demonstrated modest, non-significant improvements relative to control, suggesting potential benefits but highlighting the need for further investigation into treatment intensity, duration, or integration with schema-focused techniques.

## 6. Limitations & Suggestions

Several limitations should be considered when interpreting the findings of this study. First, the sample size was relatively small, which may limit statistical power and generalizability. Second, the reliance on self-report measures may introduce response biases, including social desirability or subjective interpretation of items. Third, the follow-up period was limited to two months, restricting conclusions about long-term maintenance of therapeutic gains. Additionally, participants were recruited from counseling clinics in one geographic region, which may constrain the applicability of results to broader populations.

Future studies should employ larger and more diverse samples to enhance generalizability and statistical

robustness. Longitudinal designs with extended follow-up periods would provide greater insight into the durability of intervention effects on perseverative thinking. Comparative studies incorporating neurobiological measures could clarify mechanisms underlying differential treatment outcomes. Researchers may also examine integrative models combining CBT and schema therapy techniques to determine whether hybrid approaches yield additive or synergistic benefits. Investigating moderating variables such as severity of depressive symptoms, schema profile, or emotion regulation capacity would further refine clinical decision-making.

From a clinical perspective, the findings suggest that schema-focused interventions may be particularly beneficial for young adults whose depressive symptoms are characterized by persistent repetitive negative thinking. Mental health practitioners should consider assessing maladaptive schemas and schema modes when designing treatment plans. Training clinicians in experiential and mode-focused techniques may enhance therapeutic outcomes. While CBT remains a valuable and evidence-based approach, integrating schema-level conceptualization may improve effectiveness in cases involving entrenched cognitive patterns. Tailoring interventions to individual cognitive-emotional profiles can support more precise and sustainable reductions in perseverative thinking.

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### Declaration of Interest

The authors of this article declared no conflict of interest.

### Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

### Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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### Authors' Contributions

All authors equally contributed to this article.

### References

- Akers, N., Berry, K., & Taylor, C. D. J. (2025). Do Cognitive Behavioural Therapy Interventions Lead to Schema Change in People With Psychosis? A Systematic Review and Meta-Analysis. *Clinical Psychology & Psychotherapy*, 32(2). <https://doi.org/10.1002/cpp.70049>
- Ali, F. (2024). cognitive behavioral therapy: transforming negative thinking and promoting mental health. *Scientific Research reports*, 1(01), 1-11. <https://healthtimes.co.zw/navigating-the-midlife-crisis-understanding-its-impact-on-mental-health-and-strategies-for-resilience/>
- Asadi, A., Sadeghi, J., Farashzadeh Jaloudar, R., & Araei, O. (2025). Comparison of the effectiveness of cognitive-behavioral therapy and schema therapy in reducing exam anxiety and improving academic performance. *International Maher Publications*, 2(2). <http://193.36.85.187:9110/index.php/ecp/article/view/220>
- Ebrahimi, S., Moheb, N., & Vafa, M. A. (2024). Comparison of the Effectiveness of Cognitive-Behavioral Therapy and Acceptance and Commitment Therapy on Cognitive Distortions and Rumination in Adolescents With Social Anxiety Disorder. *Practice in Clinical Psychology*, 12(1), 81-94. <https://doi.org/10.32598/jpcp.12.1.922.1>
- Ehring, T., Zetsche, U., Weidacker, K., Wahl, K., Schönfeld, S., & Ehlers, A. (2011). The Perseverative Thinking Questionnaire (PTQ): Validation of a content-independent measure of repetitive negative thinking. *Journal of Behavior Therapy and Experimental Psychiatry*, 42(2), 225-232. <https://www.sciencedirect.com/science/article/pii/S000579161000114X>
- Eisma, M. C., de Lang, T. A., & Boelen, P. A. (2020). How thinking hurts: Rumination, worry, and avoidance processes in adjustment to bereavement. *Clinical Psychology & Psychotherapy*, 27(4), 548-558. <https://doi.org/10.1002/cpp.2440>
- Int-Veen, I. (2025). Cognitive Appraisal Modulates Theta Burst Stimulation Effects on Stress-Reactive Rumination and Affect. *Cognitive Affective & Behavioral Neuroscience*. <https://doi.org/10.3758/s13415-025-01314-z>
- Joshua, P. R., Lewis, V., Keltly, S. F., & Boer, D. P. (2025). Applications of schema therapy in young people: a systematic review. *Cognitive behaviour therapy*, 1-23. <https://doi.org/10.1080/16506073.2025.2522375>
- Ke, T., & Barlas, J. (2020). Thinking about feeling: Using trait emotional intelligence in understanding the associations between early maladaptive schemas and coping styles. *Psychology and Psychotherapy: Theory, Research and Practice*, 93(1), 1-20. <https://doi.org/10.1111/papt.12202>
- Khayatan, F., Hadian, S., & Golparvar, M. (2025). A Comparison of the Effectiveness of Emotion-Focused Schema Therapy, Compassion-Focused Forgiveness Therapy, and Cognitive-Behavioral Therapy on Emotional Capital and Its Dimensions

- in Women Victims of Domestic Violence. *Yazd Health Dawn*, 23(6), 92-108.  
[https://tbj.ssu.ac.ir/browse.php?a\\_id=3704&sid=1&slc\\_lang=en&html=1](https://tbj.ssu.ac.ir/browse.php?a_id=3704&sid=1&slc_lang=en&html=1)
- Langenecker, S. A., Schreiner, M. W., Bessette, K. L., Roberts, H., Thomas, L., Dillahunt, A., Pocius, S. L., Feldman, D. A., Jago, D., Farstead, B., & Pazdera, M. (2024). Rumination-focused cognitive behavioral therapy reduces rumination and targeted cross-network connectivity in youth with a history of depression: replication in a preregistered randomized clinical trial. *Biol Psychiatry Glob Open Sci*, 4(1), 1-10.  
<https://doi.org/10.1016/j.bpsgos.2023.08.012>
- Malekzadeh, I., Emadi, S. Z., & naghsh, z. (2024). The Effectiveness of Group Schema Therapy on Cognitive Emotion Regulation and Emotional Behavior Regulation in Mothers with Children with Learning Disabilities. *Psychology of Exceptional Individuals*, 14(53), 201-227.  
<https://doi.org/10.22054/jpe.2023.71499.2524>
- Mohammadi, H., Sepehri Shamloo, Z., & Asghari Ibrahimabad, M. J. (2019). Effectiveness the schema therapy of group emotional on decreasing psychological remorse and emotion setting hardship in women. *Journal of Thinking and Behavior in Clinical Psychology*, 14(51), 27-36.  
<https://www.sid.ir/paper/172058/en#downloadbottom>
- Muris, P. (2006). Maladaptive schemas in non-clinical adolescents: relations to perceived parental rearing behaviours, Big Five personality factors and psychopathological symptoms. *Clinical Psychology & Psychotherapy*, 13(6), 405-413.  
<https://doi.org/10.1002/cpp.506>
- Puccetti, N. A., Stamatis, C. A., Timpano, K. R., & Heller, A. S. (2024). Worry and Rumination Elicit Similar Neural Representations: Neuroimaging Evidence for Repetitive Negative Thinking. *Cognitive Affective & Behavioral Neuroscience*, 25(2), 488-500.  
<https://doi.org/10.3758/s13415-024-01239-z>
- Razzaghi, M., Zemestani, M., & Mashhadi, A. (2025). Effectiveness of Emotional Schema Therapy on Anxiety Symptoms, Emotion Regulation, and Marital Satisfaction in Women with Anxiety Disorders: A Preliminary Study. *International Journal of Cognitive Behavioral Therapy*.  
<https://link.springer.com/article/10.1007/s41811-025-00238-3>
- Sooreh, J., Hajloo, N., Atadokht, A., & Basharpour, S. (2023). Comparing the Effectiveness of Positive Thinking Skills (PTS) and Mindfulness-Based Cognitive Therapy (MBCT) in Promoting Demoralization and Psycho-Social Adjustment in Cancer Patients. *Journal of Sabzevar University of Medical Sciences*, 30(2), 193-207.  
<https://doi.org/10.30468/jsums.2023.1557>
- Stavropoulos, A., Haire, M., Brockman, R., & Meade, T. (2020). A schema mode model of repetitive negative thinking. *Clinical Psychologist*, 24(2), 99-113.  
<https://doi.org/10.1111/cp.12205>
- Wang, J., Sheng, M., & Song, R. (2024). Enhancing Classroom Behaviors and Creativity: The Impact of a Critical Thinking Workshop. *International Journal of Education and Cognitive Sciences*, 5(1), 8-15.  
<https://doi.org/10.61838/kman.ijecs.5.1.6>