


# The Effectiveness of Schema Therapy on Depression and Cognitive Emotion Regulation in Adolescents with Psychosomatic Disorders

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## Article Info

### Article type:

Original Research

### How to cite this article:

Ahangaran, A. & Zoghi Paidar, M. R. (2026). The Effectiveness of Schema Therapy on Depression and Cognitive Emotion Regulation in Adolescents with Psychosomatic Disorders. *Journal of Adolescent and Youth Psychological Studies*, 7(6), 1-11.

<http://dx.doi.org/10.61838/kman.jayps.5221>



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## ABSTRACT

**Objective:** This study aimed to determine the effectiveness of schema therapy in reducing depression and improving cognitive emotion regulation among adolescents with psychosomatic disorders.

**Methods and Materials:** This quasi-experimental study used a pre-test, post-test, and two-month follow-up design with a control group. The statistical population included adolescents with psychosomatic disorders who referred to specialized psychology clinics in Hamedan. Thirty participants were selected through convenience sampling and randomly assigned to an experimental group and a control group, with 15 participants in each group. The experimental group received schema therapy in ten 90-minute sessions, whereas the control group received no psychological intervention during the study period. Data were collected using the Depression Scale and the Cognitive Emotion Regulation Questionnaire. Data analysis was conducted using SPSS version 26 through repeated-measures two-way analysis of variance after checking the assumptions of normality, homogeneity of variance, sphericity, and equality of covariance matrices.

**Findings:** The results showed a significant between-group effect for depression ( $F = 4.688, p = 0.033, \eta^2 = 0.27$ ) and cognitive emotion regulation ( $F = 15.703, p = 0.024, \eta^2 = 0.204$ ). The within-group effect of time was also significant for depression ( $F = 24.416, p < 0.001, \eta^2 = 0.67$ ) and cognitive emotion regulation ( $F = 36.997, p < 0.001, \eta^2 = 0.785$ ). Moreover, the group-by-time interaction effect was significant for depression ( $F = 60.000, p < 0.001, \eta^2 = 0.71$ ) and cognitive emotion regulation ( $F = 66.011, p < 0.001, \eta^2 = 0.653$ ), indicating the effectiveness of schema therapy across post-test and follow-up stages.

**Conclusion:** Schema therapy appears to be an effective psychological intervention for reducing depression and enhancing cognitive emotion regulation in adolescents with psychosomatic disorders. By targeting early maladaptive schemas and modifying dysfunctional cognitive-emotional patterns, this approach can contribute to improved psychological functioning in this population.

**Keywords:** psychosomatic patients, schema therapy, depression, cognitive emotion regulation, adolescents

## 1. Introduction

Psychosomatic disorders represent a clinically important group of conditions in which psychological, emotional, cognitive, and interpersonal processes interact with physical symptoms and somatic complaints. In such conditions, bodily distress cannot be understood solely through biomedical explanations, because emotional conflict, chronic stress, maladaptive coping patterns, and dysfunctional self-representations may contribute to the onset, persistence, or aggravation of symptoms. This issue becomes especially important during adolescence, a developmental period characterized by rapid biological maturation, identity formation, heightened sensitivity to social evaluation, and increased emotional reactivity. Adolescents who experience psychosomatic problems may face a dual burden: on the one hand, they struggle with physical symptoms that disrupt daily functioning, school participation, peer relationships, and family interactions; on the other hand, they may experience psychological problems such as depression, poor emotional awareness, and difficulty regulating distress. In chronic and psychosomatic conditions, effective care requires attention not only to symptom control but also to the person's active psychological participation in the treatment process, because chronic illness management is shaped by patients' beliefs, emotional responses, perceived control, and cooperation with care systems (Rafiei et al., 2011).

Depression is one of the most common and disabling psychological problems associated with psychosomatic and chronic conditions. Depressive symptoms may include sadness, hopelessness, loss of interest, fatigue, reduced motivation, impaired concentration, disturbed sleep, self-blame, and pessimistic expectations about the future. In adolescents with psychosomatic disorders, depression may intensify somatic preoccupation, lower pain tolerance, reduce treatment adherence, and weaken the capacity to engage in adaptive coping behaviors. Depression may also reinforce avoidance, withdrawal, and helplessness, thereby creating a reciprocal cycle in which psychological distress strengthens physical complaints and physical complaints increase emotional distress. Studies on psychological interventions for severe clinical conditions have shown that reducing psychological distress and improving flexibility can meaningfully support adjustment in populations facing chronic or disabling problems (Jamali et al., 2021; Mansouri Karyani et al., 2022). Therefore, addressing depression in adolescents with psychosomatic disorders is not merely a

secondary therapeutic goal but a central requirement for improving their broader psychological functioning.

Another important construct in this clinical population is cognitive emotion regulation. Cognitive emotion regulation refers to the cognitive strategies individuals use to manage emotionally arousing experiences, reinterpret events, control attention, and modulate emotional responses. Adaptive strategies such as acceptance, positive reappraisal, planning, and perspective-taking may reduce emotional distress and support problem solving, whereas maladaptive strategies such as rumination, catastrophizing, self-blame, and blaming others can maintain or intensify psychological symptoms. The psychometric study of cognitive emotion regulation has highlighted the importance of reliable assessment of this construct in psychological research and clinical practice (Khanjani et al., 2014). For adolescents with psychosomatic disorders, cognitive emotion regulation may be particularly important because bodily symptoms often become emotionally charged experiences; the adolescent's interpretation of symptoms, perceived ability to tolerate distress, and cognitive response to discomfort can either facilitate adaptation or deepen vulnerability to depression.

The link between emotion regulation and psychopathology is also supported by research on emotional schemas, mindfulness, psychological flexibility, self-compassion, and psychological distress. Emotional schemas shape how individuals interpret emotions, whether they view emotional experiences as tolerable or dangerous, and how they respond to internal states. Maladaptive emotional schemas can make ordinary emotional reactions feel threatening, shameful, uncontrollable, or unacceptable, which may increase avoidance and psychological distress (Tirch et al., 2012). Similarly, early maladaptive schemas have been associated with reduced mindfulness, lower self-compassion, and higher psychological distress, suggesting that deep cognitive-emotional structures influence both emotional regulation and mental health outcomes (Thimm, 2017). Emotional schemas, mindfulness, self-compassion, and unconditional self-acceptance are also linked to the regulation of psychological needs, indicating that adaptive emotional processing depends on the individual's ability to recognize needs, respond to emotions without excessive avoidance, and maintain a compassionate relationship with the self (Faustino et al., 2020).

Self-compassion is highly relevant to depression and emotion regulation in psychosomatic conditions. Neff conceptualized self-compassion as a healthy attitude toward oneself that involves self-kindness rather than self-

judgment, a sense of common humanity rather than isolation, and mindful awareness rather than over-identification with painful experiences (Neff, 2003). In adolescents with psychosomatic symptoms, low self-compassion may appear as harsh self-criticism, shame about bodily complaints, fear of being misunderstood, or the belief that suffering reflects personal weakness. Empirical evidence has shown that self-compassion is inversely associated with psychopathology, supporting its protective role in mental health (MacBeth & Gumley, 2012). Kelly and colleagues also emphasized the importance of soothing oneself and resisting self-attacks as therapeutic targets in depression vulnerability, suggesting that interventions that reduce self-criticism and strengthen self-soothing may be particularly valuable for depressed individuals (Kelly et al., 2009). In this regard, compassion-focused therapy has provided an important theoretical and clinical framework for understanding how affiliative emotion systems, self-reassurance, and reduced shame can support recovery from psychological distress (Gilbert, 2009).

Several therapeutic traditions emphasize the importance of changing the individual's relationship with internal experiences. Acceptance and commitment therapy, for example, focuses on acceptance, cognitive defusion, values-based action, and psychological flexibility rather than direct suppression of symptoms (Hayes et al., 1999). In clinical populations, interventions based on acceptance and compassion have been shown to improve psychological flexibility and reduce distress, suggesting that the ability to relate differently to painful thoughts and emotions can influence mental health outcomes (Mansouri Karyani et al., 2022). Research has also shown that acceptance and commitment therapy can reduce suicidal thoughts and improve psychological flexibility among patients with bipolar disorder, indicating its relevance for severe psychological vulnerability (Jamali et al., 2021). Likewise, mindfulness-based cognitive group therapy has been found effective in increasing subjective well-being and hope in patients with multiple sclerosis, demonstrating that psychological interventions can improve mental health indicators among individuals coping with chronic physical conditions (Aghabagheri et al., 2012). These findings collectively support the broader clinical assumption that interventions targeting cognition, emotion regulation, acceptance, and self-relation can benefit individuals whose psychological and physical difficulties are interconnected.

Schema therapy is one of the most comprehensive approaches for addressing chronic emotional and

interpersonal problems. Developed by Young and colleagues, schema therapy integrates cognitive-behavioral, attachment, experiential, psychodynamic, and emotion-focused techniques to identify and modify early maladaptive schemas and dysfunctional coping styles (Young et al., 2003). Early maladaptive schemas are broad, enduring patterns involving memories, emotions, cognitions, and bodily sensations that develop when basic emotional needs are not adequately met. These schemas may concern abandonment, mistrust, emotional deprivation, defectiveness, failure, dependence, vulnerability, subjugation, unrelenting standards, or insufficient self-control. In adolescence, such schemas may become activated in response to family conflict, school pressure, peer rejection, illness-related stigma, or repeated experiences of helplessness. Once activated, schemas may generate intense emotional reactions and maladaptive interpretations of bodily sensations, thereby contributing to depressive symptoms and poor cognitive emotion regulation.

The clinical relevance of schema therapy has been supported across different psychological disorders and populations. A systematic review of clinical studies reported evidence for the effectiveness of schema therapy in reducing psychological symptoms and improving clinical outcomes, particularly for chronic and personality-related difficulties (Bakos et al., 2015). In a multicenter randomized controlled trial, schema therapy demonstrated clinical effectiveness for personality disorders, supporting the value of targeting deep maladaptive patterns rather than focusing only on surface symptoms (Bamelis et al., 2014). Earlier randomized evidence also indicated that group schema therapy could be beneficial for individuals with borderline personality disorder, suggesting that schema-focused work can be implemented in group formats and can address severe emotional dysregulation (Farrell et al., 2009). Although these studies were not conducted specifically with adolescents with psychosomatic disorders, they provide a strong theoretical and empirical foundation for using schema therapy in populations characterized by persistent emotional distress, maladaptive coping, and interpersonal vulnerability.

Schema therapy also appears relevant to depression. A meta-analysis examining schema therapy for depressive disorders found evidence supporting its effectiveness in the treatment of depression (Körük & Özabacı, 2018). Renner and colleagues further showed that schema therapy for chronic depression produced promising results in a multiple single-case series, emphasizing the potential of schema-

focused interventions for individuals whose depression is persistent and linked to entrenched cognitive-emotional patterns (Renner et al., 2016). This is particularly important for adolescents with psychosomatic disorders because depressive symptoms may not be isolated mood complaints; rather, they may be embedded in long-standing schemas such as defectiveness, vulnerability to harm, emotional deprivation, or failure. By helping clients recognize schema activation, challenge schema-driven beliefs, process painful emotional memories, and practice healthier coping responses, schema therapy may reduce depressive symptoms and improve cognitive emotion regulation.

Evidence from medical and psychosomatic-related populations further supports the application of schema-based and integrative psychological interventions. Schema therapy has been shown to improve stress, social adjustment, and psychological coherence among women with cancer, indicating its utility in populations dealing with serious physical illness and psychological burden (Isazadeh et al., 2020). More recently, the integration of schema therapy and acceptance and commitment therapy was found effective in improving subjective well-being and reducing body image concerns among women with breast cancer, suggesting that schema-focused interventions can be adapted and combined with acceptance-based strategies for patients facing illness-related emotional difficulties (Karimi Mohajeri et al., 2025). In cardiovascular patients, schema therapy and mindfulness-based cognitive therapy have been compared in relation to stress, resilience, emotion regulation, and cognitive emotion regulation, further confirming the relevance of schema-focused approaches for medical populations in which emotional and physiological processes are closely linked (Nikan et al., 2023). These studies are particularly relevant to psychosomatic disorders because they demonstrate that schema-related interventions may affect psychological variables that are central to adaptation in bodily illness.

Cognitive emotion regulation has also been targeted through compassion-based and related interventions. Compassion therapy has been shown to improve cognitive emotion regulation among female university students, suggesting that strengthening compassionate self-relating may help individuals adopt more adaptive cognitive strategies in response to emotional events (Mamdouhi et al., 2023). This finding is consistent with the broader theoretical overlap between schema therapy and compassion-based approaches. Schema therapy aims to reduce punitive, demanding, detached, or vulnerable modes and to strengthen the healthy adult mode; compassion-based models aim to

reduce shame and self-criticism while increasing warmth, soothing, and emotional safety. In adolescents with psychosomatic disorders, these therapeutic processes may be especially valuable because distress is often experienced both emotionally and bodily. When adolescents learn to identify schema-driven thoughts, regulate emotional arousal, and respond to themselves with less criticism, they may become more capable of interpreting bodily symptoms in balanced ways and using adaptive coping strategies.

Despite the growing evidence for schema therapy and related interventions, there remains a need for studies focusing specifically on adolescents with psychosomatic disorders. Much of the available literature has examined adults, personality disorders, depression, cancer, cardiovascular disease, multiple sclerosis, or university student samples. Adolescents with psychosomatic problems represent a distinct developmental and clinical group because their emotional regulation capacities, identity structures, interpersonal expectations, and coping styles are still developing. Moreover, adolescence is a sensitive period during which maladaptive schemas may become increasingly organized and influential. Intervening at this stage may prevent the consolidation of chronic depressive patterns and dysfunctional emotion regulation strategies. Therefore, examining schema therapy in this population can contribute to both developmental psychopathology and clinical intervention research by clarifying whether schema-focused treatment can reduce depression and improve cognitive emotion regulation in adolescents whose psychological distress is expressed through bodily symptoms.

Accordingly, the present study aimed to determine the effectiveness of schema therapy on depression and cognitive emotion regulation in adolescents with psychosomatic disorders.

## 2. Methods and Materials

### 2.1. Study Design and Participants

This study was designed as a quasi-experimental investigation with a pretest–posttest design and a two-month follow-up with a control group. The statistical population included all adolescents with psychosomatic disorders who referred to a specialized psychology clinic in the city of Hamadan in 2025. Based on Cohen's table, with a 95% confidence level, an effect size of 0.30, and statistical power of 0.83, the required sample size was calculated as 12 participants per group; however, to compensate for potential

attrition and enhance generalizability, 15 participants were selected for each group (a total of 30 participants). Sampling was conducted in two stages: first, through convenience sampling, and second, through simple random assignment (lottery method), resulting in 15 participants in the experimental group and 15 in the control group.

Inclusion criteria were informed consent, at least lower secondary education, no use of psychiatric medications in the past three months, and no concurrent participation in other psychotherapeutic interventions. Exclusion criteria included absence from more than two sessions, exacerbation of psychiatric disorders, and participant withdrawal. The intervention for the experimental group was conducted from March to May 2024 and consisted of ten 90-minute sessions of schema therapy, while the control group received no intervention. The two-month follow-up continued until the end of September 2024, and no participants dropped out during the study. All ethical principles, including confidentiality of information and the right to withdraw from the study, were observed, and after the completion of the study, free psychotherapeutic services were provided to the control group.

## 2.2. Measures

The Cognitive Emotion Regulation Questionnaire (CERQ) was developed by Gross and John (2003) and consists of 10 items. Respondents rate each item on a seven-point Likert scale ranging from completely disagree (score 1) to completely agree (score 7). The total score ranges from 10 to 70, with higher scores indicating better cognitive emotion regulation. The cut-off score for this questionnaire is 35. The internal consistency coefficient of the questionnaire was reported as 0.79, and its reliability using Cronbach's alpha was 0.81 (Gross & John, 2003). In addition, Soleimani and Habibi (2014) reported a Cronbach's alpha coefficient of 0.81 and a satisfactory construct validity of 0.84. The reliability of the questionnaire was also confirmed in the study by Azad, Manshaei, and Ghamarani (2019), where the reliability coefficient was 0.76 and the content validity was calculated as 0.85. In the present study, the reliability of the questionnaire, assessed using Cronbach's alpha, was 0.73, indicating acceptable reliability.

The Depression Scale (DS) was developed by Goldberg (1972) and consists of 18 items. According to the questionnaire instructions, respondents are asked to answer each item using a six-point Likert scale ranging from not at

all (score 0) to very much (score 5). The total score ranges from 0 to 90, with higher scores indicating greater levels of depression (healthy: 0–9; risk of developing depression: 10–17; borderline depression: 18–21; mild to moderate depression: 22–35; moderate to severe depression: 36–53; severe depression: 54 and above). The content validity and reliability of this questionnaire were confirmed in Goldberg's original study. In an Iranian study, Cronbach's alpha coefficients were reported as 0.90 for individuals with high school education, 0.86 for those with university education, 0.81 for other individuals, and 0.86 for the total sample. Additionally, its validity was reported as satisfactory. In the study by Aminpour et al. (2012), the reliability coefficient using Cronbach's alpha was reported as 0.84.

## 2.3. Intervention

The intervention protocol consisted of eight structured schema therapy sessions delivered over approximately four weeks, with two sessions per week, each lasting 90 minutes and conducted in a group format. The first and second sessions focused on assessment and psychoeducation, during which participants were introduced to the concept of early maladaptive schemas, their developmental origins, and underlying mechanisms, along with an explanation of group rules and the schema therapy model in a clear and accessible manner. The third and fourth sessions emphasized cognitive techniques, training participants to challenge schemas through methods such as schema validity testing, re-evaluating schema-confirming evidence, engaging in dialogues between the healthy and maladaptive parts of the self, developing educational schema cards, and completing schema monitoring forms, with the expected behavioral outcome of acquiring cognitive restructuring skills and practicing these techniques as homework. The fifth and sixth sessions targeted emotional (experiential) processing by introducing techniques such as imagery rescripting, imagined dialogues, writing therapeutic letters, and revisiting emotionally significant childhood experiences to address the developmental roots of schemas; participants were expected to express and process unresolved emotions, with homework involving documenting childhood emotional experiences through guided imagery. The seventh and eighth sessions focused on behavioral pattern-breaking and the development of adaptive coping strategies, including encouraging participants to abandon maladaptive coping styles, engage in behavioral change, enhance motivation,

evaluate the advantages and disadvantages of maintaining maladaptive behaviors, and practice healthier behavioral responses; the expected outcome was the adoption of adaptive coping strategies and their application in daily life, supported by continued behavioral practice as homework.

#### 2.4. Data Analysis

Data analysis was conducted using SPSS version 26. The statistical method used for data analysis was two-way repeated measures analysis of variance. Fisher's exact test was used to examine the demographic characteristics of participants. The Kolmogorov–Smirnov test was employed to assess the assumption of normality, Mauchly's test was used to evaluate the assumption of sphericity, and Levene's test was applied to assess the homogeneity of variances. The significance level for all tests was set at 0.05.

**Table 1**

*Descriptive Indices in Patients with Psychosomatic Disorders*

| Variable                     | Group        | Pretest (Mean ± SD) | Posttest (Mean ± SD) | Follow-up (Mean ± SD) |
|------------------------------|--------------|---------------------|----------------------|-----------------------|
| Depression                   | Experimental | 67.3 ± 44.56        | 70.3 ± 75.40         | 70.3 ± 75.40          |
|                              | Control      | 16.2 ± 45.80        | 38.3 ± 46.48         | 19.3 ± 46.12          |
| Cognitive Emotion Regulation | Experimental | 67.3 ± 80.56        | 70.3 ± 95.40         | 70.3 ± 95.40          |
|                              | Control      | 16.2 ± 80.80        | 38.3 ± 81.48         | 19.3 ± 81.12          |

To analyze the data and test the hypotheses related to depression and cognitive emotion regulation, a two-way repeated measures analysis of variance (ANOVA) was used. Prior to conducting the analysis, its assumptions were examined. The results of the Kolmogorov–Smirnov test indicated that the data distribution was normal at the 95% confidence level ( $P > 0.05$ ). The results of Levene's test were greater than 0.05, confirming the assumption of homogeneity of variances between the two groups. Mauchly's test of sphericity showed that the sphericity assumption was met for both depression ( $\chi^2 = 3.56$ ,  $P = 0.358$ ) and cognitive emotion regulation ( $\chi^2 = 16.05$ ,  $P = 0.055$ ); therefore, the sphericity-assumed results were used. Box's M test was used to assess the equality of covariance matrices, and the results indicated that this assumption was satisfied for depression (Box's M = 3.051,  $F = 1.572$ ,  $P = 0.514$ ) and cognitive emotion regulation (Box's M = 4.179,  $F = 3.260$ ,  $P = 0.508$ ).

The results of the between-group test indicated that the difference between the experimental and control groups was statistically significant in terms of mean depression ( $P = 0.008$ ) and cognitive emotion regulation ( $P = 0.024$ ). The

### 3. Findings and Results

The mean and standard deviation of age in the experimental and control groups were  $43.40 \pm 3.92$  and  $44.07 \pm 4.49$  years, respectively ( $P = 0.669$ ). The results of the independent samples t-test for age and Fisher's exact test for gender, educational level, and marital status indicated that there were no statistically significant differences between the experimental and control groups ( $P > 0.05$ ).

According to Table 1, the descriptive indices of the two groups at the pretest, posttest, and follow-up stages are presented. As shown in Table 1, the mean scores of the experimental group improved from pretest to follow-up. This improvement was reflected in the variables of depression and Cognitive Emotion Regulation through increased mean scores, indicating the effectiveness of the schema therapy intervention on these variables, whereas no substantial changes were observed in the control group.

within-group (time) test results showed that the differences in mean depression ( $P < 0.001$ ) and cognitive emotion regulation ( $P < 0.001$ ) across measurement stages were statistically significant. In other words, the differences in mean scores of depression and cognitive emotion regulation across the three stages of pretest, posttest, and follow-up in the total sample were 67% and 78%, respectively, and were statistically significant.

Furthermore, the results presented in Table 4 indicate that the interaction effect of group and time on depression and cognitive emotion regulation was statistically significant ( $P < 0.001$ ), demonstrating the effectiveness of the intervention in reducing mean depression scores and increasing cognitive emotion regulation in the posttest and follow-up stages in the experimental group compared to the control group.

The effect size or magnitude of change attributable to between-group, within-group (time), and interaction effects for depression was 77%, indicating that 77% of the variance in depression scores can be explained by these effects. Similarly, the effect size for cognitive emotion regulation was 71%, indicating that 71% of the variance in these scores

can be explained by between-group, within-group, and interaction effects.

**Table 2**

*Results of Two-Way Repeated Measures ANOVA for the Effect of the Independent Variable on Depression and Cognitive Emotion Regulation*

| Variable                     | Source of Variation | Sum of Squares | df | Mean Square | F      | P      | Effect Size |
|------------------------------|---------------------|----------------|----|-------------|--------|--------|-------------|
| Depression                   | Group               | 205.589        | 1  | 205.589     | 4.688  | 0.033  | 0.27        |
|                              | Time                | 96.572         | 2  | 48.286      | 24.416 | <0.001 | 0.67        |
|                              | Group × Time        | 120.001        | 2  | 60.000      | 30.888 | <0.001 | 0.71        |
| Cognitive Emotion Regulation | Group               | 98.822         | 1  | 98.822      | 15.703 | 0.024  | 0.204       |
|                              | Time                | 92.822         | 2  | 46.411      | 36.997 | <0.001 | 0.785       |
|                              | Group × Time        | 132.022        | 2  | 66.011      | 18.206 | <0.001 | 0.653       |

#### 4. Discussion

The present study examined the effectiveness of schema therapy on depression and cognitive emotion regulation in adolescents with psychosomatic disorders. The inferential findings showed that schema therapy had a significant effect on both study variables. For depression, the between-group effect was significant ( $F = 4.688, p = 0.033, \eta^2 = 0.27$ ), the within-group effect of time was significant ( $F = 24.416, p < 0.001, \eta^2 = 0.67$ ), and the group-by-time interaction was also significant ( $F = 60.000, p < 0.001, \eta^2 = 0.71$ ). These results indicate that the reduction of depression in the experimental group was not merely due to the passage of time but was associated with participation in the schema therapy intervention. Similarly, for cognitive emotion regulation, the between-group effect was significant ( $F = 15.703, p = 0.024, \eta^2 = 0.204$ ), the within-group effect of time was significant ( $F = 36.997, p < 0.001, \eta^2 = 0.785$ ), and the group-by-time interaction was significant ( $F = 66.011, p < 0.001, \eta^2 = 0.653$ ). Therefore, schema therapy significantly improved adolescents' cognitive emotion regulation from pre-test to post-test and follow-up compared with the control group. The large interaction effects suggest that the therapeutic changes were not only statistically significant but also clinically meaningful, particularly because the improvements remained evident during the follow-up phase.

The reduction of depression following schema therapy is consistent with the theoretical foundations of schema therapy and with prior empirical findings. Schema therapy is designed to identify and modify early maladaptive schemas, dysfunctional coping responses, and maladaptive schema modes that maintain chronic emotional distress (Young et al., 2003). In adolescents with psychosomatic disorders, depressive symptoms may be intensified by schemas such as defectiveness/shame, emotional deprivation, vulnerability to

harm, failure, dependence, and subjugation. These schemas can lead adolescents to interpret bodily symptoms as evidence of weakness, helplessness, or personal inadequacy, thereby deepening sadness, hopelessness, and withdrawal. The findings of the present study are aligned with the meta-analytic evidence showing the effectiveness of schema therapy in depressive disorders (Körük & Özabacı, 2018) and with clinical findings indicating that schema therapy can reduce chronic depressive symptoms by addressing deeper cognitive-emotional structures rather than only surface-level negative thoughts (Renner et al., 2016). Thus, the observed reduction in depression may be explained by the intervention's ability to weaken rigid maladaptive schemas and strengthen healthier self-perceptions.

The results are also supported by broader evidence regarding the clinical effectiveness of schema therapy. A systematic review reported that schema therapy has meaningful therapeutic effects across several psychological conditions, especially where symptoms are persistent and linked to entrenched personality, emotional, and interpersonal patterns (Bakos et al., 2015). Similarly, a multicenter randomized controlled trial confirmed the clinical effectiveness of schema therapy for personality disorders, supporting the idea that changing deep maladaptive patterns can produce significant psychological improvement (Bamelis et al., 2014). Group schema therapy has also shown effectiveness in reducing severe emotional and interpersonal dysfunction, suggesting that schema-based interventions can be delivered effectively in structured therapeutic formats (Farrell et al., 2009). Although these studies were conducted in different clinical populations, they support the central conclusion of the present study: when therapy targets the underlying cognitive-emotional structures that organize self-perception, emotional

responses, and coping behavior, reductions in psychological distress can occur.

The effectiveness of schema therapy in reducing depression among adolescents with psychosomatic disorders may also be explained through changes in self-criticism and self-compassion. Depressed adolescents often experience harsh internal dialogue, guilt, shame, and feelings of inadequacy, which may aggravate both psychological and bodily distress. Self-compassion has been conceptualized as a healthy way of relating to oneself through self-kindness, common humanity, and mindful awareness rather than self-judgment and over-identification with distress (Neff, 2003). Evidence shows that self-compassion is negatively associated with psychopathology, including depression and anxiety symptoms (MacBeth & Gumley, 2012). Furthermore, reducing self-attacking and increasing self-soothing have been identified as important therapeutic mechanisms in depression vulnerability (Kelly et al., 2009). Schema therapy includes experiential, cognitive, and relational techniques that help clients confront punitive or critical internal modes and develop healthier, more compassionate self-responses. This process is conceptually consistent with compassion-focused therapy, which emphasizes the development of soothing, safety, and affiliative emotional systems to reduce shame and psychological distress (Gilbert, 2009). Therefore, the reduction of depression in the present study may partly reflect a shift from self-criticism and helplessness toward self-understanding, emotional safety, and healthier self-evaluation.

The improvement in cognitive emotion regulation is another important finding of this study. Cognitive emotion regulation refers to the cognitive strategies individuals use to understand, manage, reinterpret, and respond to emotionally stressful events. The significant time and interaction effects suggest that adolescents in the experimental group became more capable of regulating emotional distress cognitively after schema therapy. This finding is consistent with psychometric and clinical work emphasizing cognitive emotion regulation as an important psychological construct for understanding emotional adaptation and vulnerability (Khanjani et al., 2014). It also corresponds with studies showing that interventions focused on compassion, mindfulness, and cognitive-emotional processing can improve cognitive emotion regulation. For example, compassion therapy has been shown to improve cognitive emotion regulation among female students (Mamdouhi et al., 2023), and mindfulness-based cognitive

group therapy has been found effective in improving subjective well-being and hope among patients with multiple sclerosis (Aghabagheri et al., 2012). These studies support the interpretation that psychological interventions can improve how individuals cognitively process emotional experiences, especially when they target self-awareness, acceptance, and adaptive reinterpretation.

Schema therapy may improve cognitive emotion regulation because it works directly with the beliefs, memories, emotional meanings, and coping styles that shape emotional responses. Adolescents with psychosomatic disorders may interpret distressing bodily sensations catastrophically, blame themselves for symptoms, ruminate about illness, or avoid emotionally demanding situations. Schema therapy helps individuals identify these automatic schema-driven reactions and replace them with more adaptive responses. Research on emotional schemas indicates that individuals' beliefs about emotions influence psychological flexibility, anxiety, and emotional functioning (Tirch et al., 2012). Furthermore, early maladaptive schemas have been linked to lower mindfulness and self-compassion and higher psychological distress (Thimm, 2017). Faustino and colleagues also showed that emotional schemas, mindfulness, self-compassion, and unconditional self-acceptance are related to the regulation of psychological needs (Faustino et al., 2020). Therefore, by modifying maladaptive emotional schemas and strengthening healthier modes of responding, schema therapy can plausibly enhance adolescents' capacity to regulate emotions cognitively.

The present findings are also aligned with studies conducted in medical and chronic illness populations. Schema therapy has been found effective in improving stress, social adjustment, and psychological coherence among women with cancer (Isazadeh et al., 2020). An integrated intervention combining schema therapy and acceptance and commitment therapy improved subjective well-being and reduced body image concerns among women with breast cancer (Karimi Mohajeri et al., 2025). In cardiovascular patients, schema therapy and mindfulness-based cognitive therapy have been examined in relation to stress, resilience, emotion regulation, and cognitive emotion regulation, supporting the clinical relevance of schema-focused and mindfulness-based interventions for individuals with physical illness (Nikan et al., 2023). These findings are particularly relevant because psychosomatic disorders involve a close interaction between physical symptoms and psychological processes. When adolescents learn to identify schema activation, tolerate emotional discomfort, and

reinterpret distressing experiences, their bodily symptoms may become less psychologically overwhelming, even if the intervention primarily targets psychological variables.

The findings may also be interpreted in light of acceptance-based models. Acceptance and commitment therapy emphasizes psychological flexibility, acceptance of internal experiences, cognitive defusion, and values-based action (Hayes et al., 1999). Studies have shown that acceptance- and compassion-based approaches can reduce psychological distress and increase psychological flexibility in patients with chronic conditions such as multiple sclerosis (Mansouri Karyani et al., 2022), and can reduce suicidal thoughts and improve psychological flexibility in patients with bipolar disorder (Jamali et al., 2021). Although the present intervention was schema therapy, its mechanisms partly overlap with acceptance-based approaches: adolescents are encouraged to recognize internal experiences, reduce avoidance, relate differently to distressing thoughts, and develop healthier behavioral responses. In chronic disease care, patient participation, psychological engagement, and adaptive coping are central to effective management (Rafiei et al., 2011). Therefore, schema therapy may enhance psychological adjustment in psychosomatic adolescents by increasing their active role in understanding and regulating their emotional and bodily experiences.

## 5. Conclusion

Overall, the findings indicate that schema therapy can be considered an effective intervention for reducing depression and improving cognitive emotion regulation in adolescents with psychosomatic disorders. The sustained effects at follow-up suggest that the intervention may have helped participants acquire more stable cognitive-emotional skills rather than producing only temporary symptom relief. By combining cognitive restructuring, experiential techniques, emotional processing, behavioral pattern-breaking, and corrective relational experiences, schema therapy appears capable of addressing the underlying psychological mechanisms that maintain depression and poor emotion regulation. In psychosomatic adolescents, this is particularly important because emotional distress may be expressed through bodily symptoms, and bodily symptoms may in turn intensify negative emotions. The present study therefore contributes to the growing literature supporting schema therapy and related psychological interventions for

populations experiencing chronic, complex, and body-related psychological distress.

**Limitations:** Despite its meaningful findings, this study had several limitations. First, the sample size was relatively small, which may limit the statistical power and generalizability of the findings. Second, participants were selected through convenience sampling from clinical settings in one city, and therefore the results may not be representative of all adolescents with psychosomatic disorders. Third, the study relied on self-report questionnaires, which may be influenced by social desirability, response bias, or participants' limited insight into their emotional processes. Fourth, although a two-month follow-up was included, the duration was not sufficient to determine the long-term stability of therapeutic effects. Fifth, the study did not separately analyze different types or severities of psychosomatic symptoms, while adolescents with different bodily complaints may respond differently to schema therapy.

**Suggestions for future research:** Future studies should replicate this research with larger samples, randomized controlled designs, and participants from different clinical, educational, and cultural contexts. It is also recommended that future research use longer follow-up periods to examine whether improvements in depression and cognitive emotion regulation remain stable over time. Researchers should consider comparing schema therapy with other evidence-based interventions, such as cognitive-behavioral therapy, mindfulness-based therapy, compassion-focused therapy, and acceptance and commitment therapy. Future studies may also examine mediating mechanisms, such as changes in early maladaptive schemas, self-compassion, psychological flexibility, rumination, and coping styles. In addition, using multi-method assessment, including clinical interviews, parent reports, therapist ratings, and physiological indicators, can provide a more comprehensive understanding of treatment outcomes.

**Suggestions for practice:** Clinicians working with adolescents with psychosomatic disorders are encouraged to assess depression, cognitive emotion regulation, maladaptive schemas, and coping styles as part of the treatment process. Schema therapy can be used as a structured intervention to help adolescents identify the emotional meanings attached to bodily symptoms, challenge maladaptive beliefs, reduce self-criticism, and develop healthier cognitive and behavioral responses. Therapists should adapt schema therapy techniques to adolescents' developmental level by using simple language, experiential

exercises, imagery, role-play, and homework assignments. Collaboration with families, physicians, school counselors, and other health professionals may also increase the effectiveness of treatment. Finally, group-based schema therapy may be a practical and cost-effective option in clinical centers, especially when access to long-term individual psychotherapy is limited.

### Acknowledgments

We would like to express our appreciation and gratitude to all those who cooperated in carrying out this study.

### 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.

### Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

### Authors' Contributions

All authors equally contributed to this article.

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