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Comparison of the Effectiveness of Psychological Debriefing–Based Intervention and Schema Therapy on Post-Traumatic Stress Arousal Symptoms and Coping Styles in Adolescent Girls Affected by Sexual Abuse

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A B S T R A C T

Objective: This study aimed to compare the effectiveness of psychological debriefing and schema therapy on post-traumatic stress arousal symptoms and coping styles among adolescent girls affected by sexual abuse.

Methods and Materials: This quasi-experimental study employed a pretest–posttest control group design with three groups: psychological debriefing, schema therapy, and control. The sample included 45 adolescent girls aged 12–18 years who were referred to the Social Emergency Center in Varamin, Iran, in 2024, after experiencing sexual abuse. Participants were selected through purposive sampling based on inclusion criteria and randomly assigned to one of the three groups (15 per group). The interventions consisted of a 12-session schema therapy program based on Young's model and a single-session (two-hour) psychological debriefing protocol based on Mitchell and Everly's model. Research instruments included the Endler and Parker Coping Inventory for Stressful Situations (CISS) and the PTSD Symptom Scale developed by Weathers et al. Data were analyzed using mixed-design analysis of variance (ANOVA) with a significance level of $p < .05$.

Findings: The results showed that both interventions led to a significant increase in problem-focused coping and a significant reduction in emotion-focused and avoidance coping styles, as well as decreased emotional arousal symptoms among adolescent girls in the experimental groups compared to the control group ($p < .05$). The within-group and interaction effects of time and group were statistically significant, while no significant differences were observed between the two intervention groups, indicating comparable efficacy of psychological debriefing and schema therapy in reducing post-traumatic symptoms.

Conclusion: Both schema therapy and psychological debriefing are effective trauma-focused interventions for adolescent girls affected by sexual abuse, improving coping strategies and reducing hyperarousal symptoms. Integrating these methods into a staged treatment protocol may optimize recovery outcomes for this vulnerable population.

Keywords: *Schema therapy; psychological debriefing; sexual abuse; post-traumatic stress disorder; coping styles; adolescents.*

1. Introduction

Sexual abuse represents one of the most devastating forms of trauma that can occur during adolescence, a developmental period characterized by identity formation, cognitive growth, and emotional vulnerability. The psychological and neurobiological consequences of such traumatic experiences extend far beyond the immediate event, often manifesting as post-traumatic stress disorder (PTSD), dissociative symptoms, and chronic emotional dysregulation (World Health, 2024). According to the World Health Organization, millions of adolescent girls globally are exposed to sexual violence each year, resulting in enduring emotional scars that compromise mental health, interpersonal relationships, and academic functioning (World Health, 2024). The aftermath of sexual trauma in adolescence is particularly severe because it disrupts critical neurodevelopmental processes linked to emotion regulation, self-concept, and cognitive control, which are still in maturation (Giroux & Sciolla, 2024).

Post-traumatic stress disorder is a multifaceted psychiatric condition that arises following exposure to overwhelming stressors, characterized by intrusive memories, hyperarousal, avoidance behaviors, and negative alterations in mood and cognition (Omopo, 2024). The disorder's hallmark symptoms—hyperarousal, intrusive recollections, and dissociation—are closely linked to dysregulated neural pathways involving the amygdala, hippocampus, and prefrontal cortex (Brzozowska & Grabowski, 2025). In adolescent survivors of sexual abuse, hyperarousal manifests as chronic vigilance, exaggerated startle responses, and persistent anxiety, which collectively impair emotional stability and coping mechanisms. Dysregulation in cortisol and other neuroendocrine systems also contributes to sustained physiological stress reactivity (Brzozowska & Grabowski, 2025). The cyclical nature of traumatic re-experiencing, including recurring nightmares and flashbacks, often entrenches individuals in a maladaptive feedback loop that perpetuates distress and inhibits recovery (Avci, 2025).

Adolescents who have experienced sexual trauma frequently develop maladaptive coping styles as a result of their disrupted emotional processing and cognitive schemas (Spirou et al., 2022). Studies show that trauma-exposed youth often rely on avoidance and emotion-focused strategies rather than problem-focused coping, thereby reinforcing psychological vulnerability (Tous et al., 2021). Avoidance, though initially protective, prevents emotional integration of the traumatic memory and may exacerbate PTSD symptoms over time. In contrast, adaptive coping and emotional processing have been identified as protective mechanisms that promote recovery and resilience. Understanding and modifying these coping responses is central to psychotherapeutic interventions for trauma survivors (Omopo, 2024).

Among the psychotherapeutic approaches developed to treat trauma-related disorders, *schema therapy* and *psychological debriefing* have both shown promising outcomes but differ substantially in theoretical foundation and treatment focus (Baum et al., 2025; Handelsalt et al., 2022). Schema therapy, originally conceptualized by Young and further refined by subsequent scholars, integrates elements from cognitive-behavioral, attachment, and experiential models to target deeply rooted maladaptive schemas formed during early life experiences (Handelsalt et al., 2022). These early maladaptive schemas, such as defectiveness/shame, mistrust/abuse, and emotional deprivation, are particularly relevant to survivors of sexual abuse, as traumatic experiences often reinforce or reactivate these core beliefs (Spirou et al., 2022). Through cognitive, behavioral, and experiential techniques—such as imagery rescripting, limited reparenting, and cognitive restructuring—schema therapy aims to modify these patterns and promote adaptive coping (Peters et al., 2022).

Empirical evidence has supported schema therapy's effectiveness in improving emotional regulation, reducing avoidance, and alleviating PTSD symptoms (Bergold et al., 2024). In a comparative meta-analysis, schema therapy demonstrated significant improvement in trauma-related symptoms among adolescents, highlighting its utility for individuals with complex trauma histories (Bergold et al., 2024). Moreover, long-term outcomes suggest that schema modification leads to durable emotional and behavioral changes, with sustained improvement in emotional resilience and interpersonal functioning (Joshua et al., 2023). Clinical findings also indicate that schema-focused interventions enhance metacognitive awareness and promote adaptive emotion regulation strategies, both of which are crucial for trauma recovery (Parkes, 2021).

On the other hand, *psychological debriefing (PD)*—a structured early intervention typically delivered shortly after a traumatic event—focuses on mitigating acute stress responses and preventing the development of chronic PTSD (Tous et al., 2021). The debriefing model, pioneered by Mitchell and Everly, facilitates emotional expression, cognitive processing of the traumatic experience, and

normalization of post-trauma reactions within a supportive environment (Baum et al., 2025). The intervention's structured stages—introduction, factual phase, emotional phase, cognitive processing, and closure—aim to promote catharsis, foster peer support, and reduce distress by integrating the traumatic memory into a coherent narrative (Baum et al., 2025).

Although psychological debriefing was originally designed for emergency responders and healthcare professionals, its application has expanded to various populations exposed to acute trauma, including adolescents (Mousavi et al., 2024). Research shows that psychological debriefing enhances emotional ventilation, reduces intrusive thoughts, and facilitates adaptive coping in individuals exposed to traumatic stressors (Tous et al., 2021). For example, Mousavi et al. (2024) found that debriefing significantly reduced postnatal PTSD symptoms and improved emotional adjustment in trauma-exposed mothers. However, some scholars argue that its efficacy depends on appropriate implementation timing, the facilitator's skill, and the group's readiness to process the trauma (Baum et al., 2025). When delivered correctly within a structured protocol, psychological debriefing has been associated with decreased physiological arousal and improved self-regulation (Baum et al., 2025).

While both schema therapy and psychological debriefing target trauma-related distress, they differ fundamentally in temporal focus and therapeutic depth. Schema therapy addresses chronic maladaptive cognitive and emotional patterns that perpetuate psychological suffering, while psychological debriefing focuses on acute stress regulation and early emotional processing after trauma exposure (Handelsalt et al., 2022; Tous et al., 2021). Integrating both approaches offers a potentially synergistic framework: schema therapy's long-term schema restructuring may complement the immediate emotional stabilization achieved through debriefing. This integration is particularly valuable for adolescents, whose cognitive and emotional immaturity may limit the effectiveness of single-method interventions (Giroux & Sciolla, 2024).

Recent investigations emphasize that adolescents exposed to sexual trauma exhibit unique neuropsychological vulnerabilities requiring tailored interventions (Brzozowska & Grabowski, 2025). Hyperarousal and re-experiencing symptoms are associated with increased amygdala activation and diminished prefrontal regulation, underscoring the need for interventions that address both cognitive and emotional dimensions of trauma (Avci, 2025). Schema therapy achieves this through cognitive restructuring and experiential rescripting, while psychological debriefing provides immediate emotional relief and normalization of trauma responses. Evidence suggests that trauma-informed interventions that balance both emotional and cognitive processing yield the most comprehensive outcomes for adolescent survivors (Bergold et al., 2024).

Furthermore, therapeutic success among trauma-affected adolescents depends on addressing not only PTSD symptoms but also the maladaptive coping strategies that reinforce emotional distress (Omopo, 2024). Studies have shown that schema therapy enhances problem-focused coping and reduces emotion-focused and avoidant strategies (Handelsalt et al., 2022; Joshua et al., 2023). Similarly, psychological debriefing has been linked to reductions in maladaptive coping and emotional hyperarousal when implemented shortly after trauma exposure (Tous et al., 2021). Both modalities emphasize the importance of emotional processing in restoring psychological homeostasis, but schema therapy extends further by transforming enduring maladaptive schemas into adaptive beliefs and behaviors (Peters et al., 2022).

Despite accumulating evidence, few studies have directly compared the efficacy of schema therapy and psychological debriefing among adolescent survivors of sexual abuse—a population that is simultaneously vulnerable and resilient. Given the prevalence of sexual trauma and the potential for long-term psychopathology, evaluating the comparative effectiveness of these two interventions is of clinical importance (World Health, 2024). The psychological consequences of sexual abuse often manifest in chronic hyperarousal, emotional instability, and maladaptive coping styles that hinder recovery (Brzozowska & Grabowski, 2025; Spirou et al., 2022). Therefore, identifying the most effective therapeutic strategies can inform clinical practice, guide post-crisis intervention frameworks, and optimize trauma recovery among adolescent populations (Baum et al., 2025; Bergold et al., 2024).

Moreover, research has underscored the necessity of developmentally sensitive interventions that accommodate the cognitive and emotional profiles of adolescents (Giroux & Sciolla, 2024). Psychological debriefing provides a safe context for immediate emotional expression, which may be particularly beneficial for adolescents struggling to articulate trauma-related emotions (Tous et al., 2021). Schema therapy, conversely, helps adolescents identify and modify dysfunctional patterns internalized during childhood, offering a more comprehensive and enduring

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form of trauma recovery (Peters et al., 2022). The comparative evaluation of these approaches can therefore bridge a critical gap in trauma-focused adolescent psychotherapy.

In conclusion, trauma resulting from sexual abuse during adolescence remains one of the most challenging domains of clinical psychology, demanding integrated and evidence-based interventions. Psychological debriefing offers immediate relief by facilitating emotional ventilation and normalization, whereas schema therapy promotes deeper cognitive and behavioral restructuring conducive to long-term recovery (Baum et al., 2025; Handelsalt et al., 2022). Given the growing recognition of trauma's multidimensional impact on adolescents' emotional and cognitive development, comparative research on these interventions can contribute significantly to refining clinical practice and optimizing therapeutic outcomes.

Therefore, the aim of this study was to compare the effectiveness of psychological debriefing–based intervention and schema therapy on post-traumatic stress arousal symptoms and coping styles in adolescent girls affected by sexual abuse.

2. Methods and Materials

2.1. Study Design and Participants

The present study is an applied research in terms of purpose and a quasi-experimental design with a control group in terms of methodology. The design included two experimental groups and one control group using pretest and posttest measurements. The statistical population consisted of all adolescent girls who were referred to the Social Emergency Center of Varamin City in 2024 and had experienced sexual abuse. Based on the research design, a total of 45 participants were selected through purposive sampling, considering their ability to attend the sessions and their voluntary consent. They were then randomly assigned to three groups: Experimental Group 1 (psychological debriefing–based intervention), Experimental Group 2 (schema therapy–based intervention), and the control group.

The inclusion criteria were experiencing sexual abuse, being within the age range of 12–18 years, not participating simultaneously in another study, educational, or therapeutic program, and having the willingness of both the adolescent and her parents to participate in the study. The exclusion criteria included incomplete responses to questionnaire items and non-cooperation during the intervention process.

In the implementation stage, after obtaining the ethical approval code IR.IAU.K.REC.1403.612 from the Islamic Azad University, Tabriz Branch, the researchers attended the Social Emergency Center in Varamin City and announced a call for study participation. Eligible participants were given an informed consent form. Before the intervention, the rationale and objectives of the study were explained to the participants. Ethical considerations were strictly observed; consent from both the adolescents and their parents was obtained, and they were informed of all stages of the study. Participants were assured that their data would remain confidential and that the results would be published anonymously. Additionally, participants were informed of their right to withdraw from the study at any stage.

2.2. Measures

Post-Traumatic Stress Disorder Symptom Scale (PSS): This questionnaire was developed by Weathers et al. (1994) based on the diagnostic criteria of the DSM for the U.S. National Center for PTSD. It includes 17 items across three components: five items assess re-experiencing symptoms of the traumatic event, seven items assess emotional numbing and avoidance, and five items assess emotional arousal symptoms. The questionnaire can be scored in two ways. The total score ranges from 17 to 85 and is obtained by summing responses to all 17 items on a 5-point Likert scale (1 = not at all, 2 = a little, 3 = moderately, 4 = quite a bit, 5 = extremely). The minimum possible score is 17, and the maximum is 85. A cutoff score of 50 is used to identify PTSD. Both international and domestic studies have confirmed the validity and reliability of this questionnaire. Weathers et al. (2018) reported a Cronbach's alpha of .94 and strong construct validity. Bovin et al. (2022), in a meta-analysis, confirmed its high diagnostic accuracy across diverse populations. Recent Iranian studies, such as Mohagheghi et al. (2021), also confirmed the factorial structure and reliability of the instrument with an overall Cronbach's alpha of .92 among Iranian samples.

Coping Inventory for Stressful Situations (CISS): This inventory was developed by Endler and Parker (1990) and translated into Persian by Akbarzadeh (1997). It is suitable for individuals aged 12–18 years. The inventory contains 48 items rated on a 5-point Likert scale ranging from 1 (never) to 5 (always). It measures three main coping behavior components: problem-focused coping, emotion-focused coping (focusing on emotional responses), and avoidance coping. Since it uses a 5-point scale, the maximum score for

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each item is 5 and the minimum is 1. The respondent must answer all questions. If five or fewer questions are left unanswered, the researcher may assign a neutral score of 3; however, if more than five items are left blank, the questionnaire will not be scored. The range of scores for each coping style (problem-focused, emotion-focused, and avoidance) varies from 16 to 80. The predominant coping style of each individual is determined by the highest score among the three types.

To assess the reliability of the CISS among university students, Cronbach's alpha coefficients were reported as follows: problem-focused coping, .92 for males and .85 for females; emotion-focused coping, .82 for males and .85 for females; and avoidance coping, .85 for males and .82 for females. In Qureshi's research, the Cronbach's alpha coefficient for stressful situations was .81. The validity of this questionnaire has also been confirmed in studies conducted in Iran. Pearson correlation coefficients between the CISS subscales were found to be .58 for problem-focused, .55 for emotion-focused, and .93 for avoidance coping styles.

2.3. Intervention

The schema therapy intervention was implemented based on Young's (1990) model across 12 structured sessions. The first session focused on familiarizing participants with the structure, rules, and benefits of the program, as well as providing an overview of post-traumatic stress and secondary trauma, followed by the administration of a screening questionnaire. In the second session, participants were introduced to the 13 early maladaptive schemas and their related life domains, including explanations of schema formation based on core emotional needs, temperament, and early life experiences. Sessions three to five involved cognitive techniques to challenge maladaptive schemas and identify unhealthy coping styles through examining confirming and disconfirming evidence and recognizing adaptive coping methods. Sessions six to eight applied experiential techniques to evoke emotions linked to maladaptive schemas, such as writing letters, engaging in imagined dialogues, and guided imagery exercises. Sessions nine to eleven centered on behavioral techniques aimed at countering maladaptive coping styles and practicing adaptive behaviors, including problem-solving, anger management, and assertiveness training. The final session summarized all previous content, evaluated the program's effectiveness through re-administration of the questionnaires, and provided guidance on applying learned techniques in daily life situations.

The psychological debriefing intervention was adapted from the Mitchell and Everly (1996) model and conducted as a single two-hour session. This structured protocol involved guided retelling of the traumatic event and associated emotions and thoughts within a supportive environment aimed at emotional normalization and catharsis. The intervention began with an introduction and explanation phase, where the facilitator outlined the goals and process of debriefing. In the incident narration phase, participants were encouraged to recount the traumatic event in their own words. This was followed by an emotional processing phase, during which participants discussed their feelings and emotional responses related to the trauma. The education and information phase provided psychoeducation about normal stress reactions and adaptive coping strategies for post-traumatic symptoms. Finally, in the closure phase, the session concluded with a summary, group emotional stabilization, and provision of additional support resources when needed.

2.4. Data Analysis

For data analysis, the Statistical Package for the Social Sciences (SPSS, Version 24) was used. A significance level of $p < .05$ was considered. Data were analyzed using analysis of covariance (ANCOVA) to test the study hypotheses.

3. Findings and Results

The demographic findings of the 45 participants in this study included age and level of education. Participants were assigned equally (15 individuals each) to three groups: Experimental Group 1 (psychological debriefing–based therapy), Experimental Group 2 (schema therapy–based intervention), and a control group. The mean ages of participants in these groups were 15.4, 15.6, and 15.4 years, respectively, with standard deviations of 2.0, 1.9, and 2.1. Descriptive statistics for the study variables are presented in Table 1.

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Table 1

Descriptive Statistics of Coping Styles and Emotional Arousal Symptoms

Variable	Phase	Group	Mean	Standard Deviation
Problem-Focused Coping	Pretest	Psychological Debriefing	21.66	5.48
		Schema Therapy	22.03	5.39
		Control	21.60	3.68
	Posttest	Psychological Debriefing	27.60	4.91
		Schema Therapy	27.09	4.80
		Control	21.33	4.20
Emotion-Focused Coping	Pretest	Psychological Debriefing	26.27	4.99
		Schema Therapy	25.87	4.70
		Control	25.47	5.29
	Posttest	Psychological Debriefing	18.60	3.65
		Schema Therapy	18.01	4.15
		Control	25.34	4.29
Avoidance Coping	Pretest	Psychological Debriefing	24.67	5.45
		Schema Therapy	24.27	4.98
		Control	24.47	4.32
	Posttest	Psychological Debriefing	20.21	5.61
		Schema Therapy	17.27	4.57
		Control	24.40	4.90
Emotional Arousal	Pretest	Psychological Debriefing	28.40	4.55
		Schema Therapy	28.90	5.92
		Control	28.93	5.51
	Posttest	Psychological Debriefing	21.80	4.22
		Schema Therapy	23.27	4.34
		Control	28.73	5.15

Table 1 presents the descriptive means and standard deviations of stress-coping styles (problem-focused, emotion-focused, and avoidance coping) and emotional arousal symptoms in the experimental and control groups across pretest and posttest phases.

To test the effect of the between-subject factor (group) and the within-subject factor (time) on the collected measures of coping styles (problem-focused, emotion-focused, and avoidance) and emotional arousal symptoms, a simple mixed analysis of variance (ANOVA) was performed. Prior to applying this statistical method, the assumptions of homogeneity of error variances were verified using Levene's test, which confirmed the assumption. The normality of score distributions for the dependent variables across group levels was examined and confirmed using the Kolmogorov–Smirnov test ($p > .05$). Additionally, Box's M test was conducted to assess the homogeneity of covariance matrices for the dependent variables across the levels of the between-subject factor (group). The results indicated equality of covariance matrices among groups (Box's $M = 5.61$, $F(6, 3588.923) = 0.71$, $p = 0.64$).

Table 2

Test of Within-Subject and Interaction Effects Between Within- and Between-Subject Factors

Variable	Source	df	F	Sig.	η^2
Problem-Focused Coping	Measurement Time	(1, 42)	14.43	.001	.26
	Time × Group	(2, 42)	4.25	.05	.17
Emotion-Focused Coping	Measurement Time	(1, 42)	46.97	.001	.53
	Time × Group	(2, 42)	11.45	.001	.35
Avoidance Coping	Measurement Time	(1, 42)	12.57	.001	.23
	Time × Group	(2, 42)	3.50	.05	.14
Emotional Arousal	Measurement Time	(1, 42)	14.10	.001	.23
	Time × Group	(2, 42)	3.25	.05	.13

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As shown in Table 2, the main within-subject effect was statistically significant for problem-focused coping [$F(1, 42) = 14.43$, $p < .05$, $\eta^2 = .26$], emotion-focused coping [$F(1, 42) = 46.97$, $p < .05$, $\eta^2 = .53$], avoidance coping [$F(1, 42) = 12.57$, $p < .05$, $\eta^2 = .23$], and emotional arousal [$F(1, 42) = 14.10$, $p < .05$, $\eta^2 = .23$]. Furthermore, the interaction between the within-subject (time) and between-subject (group) factors was also statistically significant for problem-focused coping [$F(2, 42) = 4.25$, $p < .05$, $\eta^2 = .17$], emotion-focused coping [$F(2, 42) = 11.45$, $p < .05$, $\eta^2 = .35$], avoidance coping [$F(2, 42) = 3.50$, $p < .05$, $\eta^2 = .14$], and emotional arousal [$F(2, 42) = 3.25$, $p < .05$, $\eta^2 = .13$].

Table 3

Test of Between-Subject Effects on Coping Styles and Emotional Arousal Variables

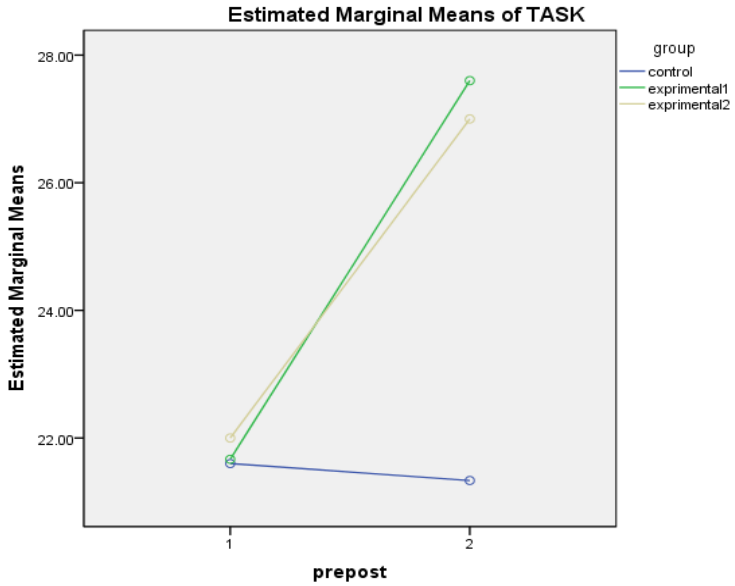
Variable	Source	df_1	df_2	F	Sig.	η^2
Problem-Focused Coping	Group	2	42	3.47	.05	.14
Emotion-Focused Coping	Group	2	42	3.82	.05	.15
Avoidance Coping	Group	2	42	4.22	.05	.17
Emotional Arousal	Group	2	42	5.12	.001	.20

As shown in Table 3, the main between-subject effect (group) was statistically significant for problem-focused coping [$F(2, 42) = 3.47$, $p < .05$, $\eta^2 = .14$], emotion-focused coping [$F(2, 42) = 3.82$, $p < .05$, $\eta^2 = .15$], avoidance coping [$F(2, 42) = 4.22$, $p < .05$, $\eta^2 = .17$], and emotional arousal [$F(2, 42) = 5.12$, $p < .05$, $\eta^2 = .20$].

The interaction plots between the within-subject factor (measurement times) and the between-subject factor (group) are presented in Figures 1–4 to facilitate understanding of the nature of data point variations over time across the levels of the group factor for coping styles and emotional arousal.

Figure 1

Interaction of Within- and Between-Subject Factors Based on Problem-Focused Coping Style



The results depicted in Figure 1, consistent with the ANOVA summary, indicate that while the mean scores of the three groups were approximately equal at the pretest level, the mean scores of the experimental groups were significantly higher than those of the control group at posttest. Therefore, whereas the control group showed minimal differences across time points, a marked increase in problem-focused coping scores from pretest to posttest was evident in both experimental groups, clearly demonstrating the interaction between within- and between-subject factors.

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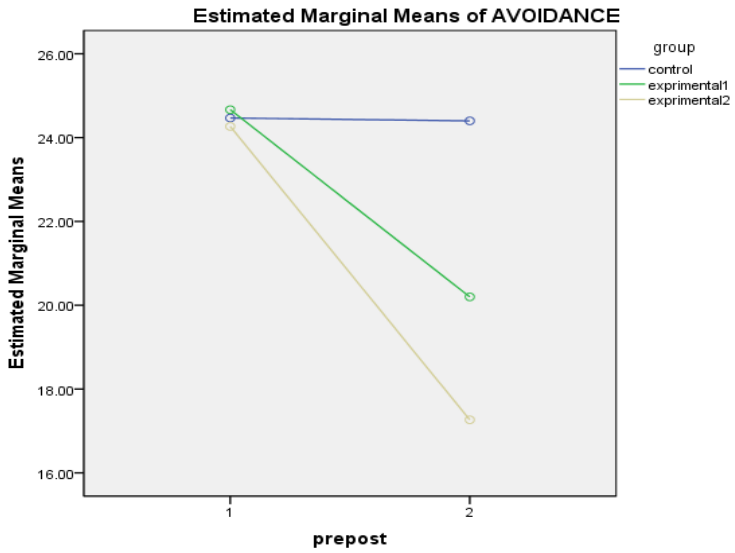
Figure 2

Interaction of Within- and Between-Subject Factors Based on Emotion-Focused Coping Style

As shown in Figure 2, the interaction effect between within- and between-subject factors is statistically significant. The mean scores of the emotion-focused coping variable showed little difference across two time points in the control group, whereas the experimental groups exhibited a marked decline, confirming the significant interaction between the two factors in explaining the variability of emotion-focused coping scores.

Figure 3

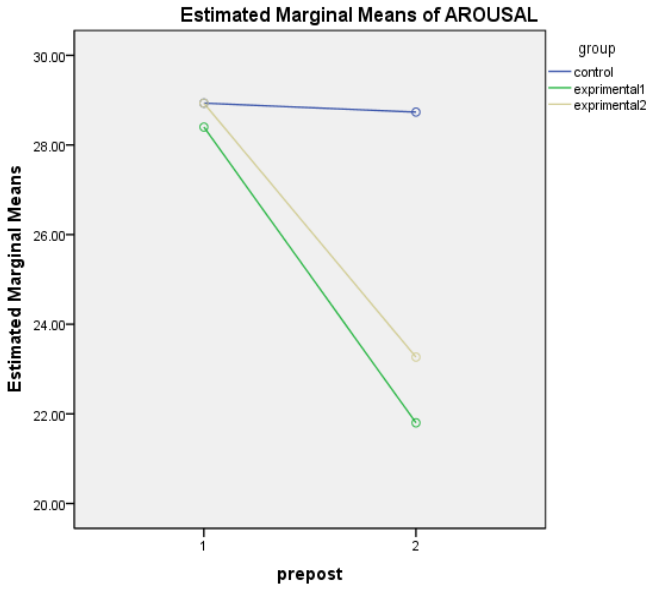
Interaction of Within- and Between-Subject Factors Based on Avoidance Coping Style



Similarly, Figure 3 illustrates that the shape of the plotted functions clearly indicates the statistical significance of the interaction effect between the within- and between-subject factors.

Figure 4

Interaction of Within- and Between-Subject Factors Based on Emotional Arousal



Finally, as illustrated in Figure 4, the interaction functions again confirm the statistically significant interaction effect between the within- and between-subject factors on emotional arousal.

4. Discussion and Conclusion

The results of this study revealed that both the *psychological debriefing* and *schema therapy* interventions were effective in reducing post-traumatic emotional arousal symptoms and improving adaptive coping styles among adolescent girls affected by sexual abuse. Specifically, the findings indicated a significant increase in *problem-focused coping* and a significant reduction in *emotion-focused* and *avoidance coping* in both experimental groups compared to the control group. Moreover, the results demonstrated a significant decrease in emotional hyperarousal symptoms among participants who received either intervention. No statistically significant difference was observed between the two intervention groups, suggesting that both approaches yield comparable therapeutic benefits in this population. These results underscore the relevance of structured trauma-focused interventions that address both the cognitive and emotional dimensions of post-traumatic adaptation (Bergold et al., 2024; Joshua et al., 2023).

The observed improvements in problem-focused coping are consistent with previous evidence indicating that schema-focused interventions can enhance self-regulation and cognitive restructuring in individuals with trauma histories (Handelsalt et al., 2022; Peters et al., 2022). Schema therapy operates on the principle that maladaptive coping styles such as avoidance or emotional withdrawal are rooted in early maladaptive schemas that distort the individual's appraisal of traumatic experiences. Through experiential and cognitive techniques—such as imagery rescripting, chair dialogues, and limited reparenting—participants in schema therapy learn to identify and modify these patterns, replacing maladaptive responses with adaptive strategies. The significant increase in problem-focused coping observed in this study likely reflects participants' improved ability to recognize maladaptive thoughts and apply constructive behavioral strategies to manage emotional distress, aligning with the findings of (Joshua et al., 2023) who reported long-term schema restructuring and enhanced emotional resilience among trauma survivors receiving schema therapy.

Additionally, the reduction in emotion-focused and avoidance coping styles observed across both intervention groups suggests improved emotional regulation and decreased reliance on avoidance mechanisms as a defense strategy. This finding corroborates earlier studies demonstrating that both schema therapy and psychological debriefing facilitate emotional processing of traumatic memories, reducing the intensity of emotional reactivity and avoidance (Bergold et al., 2024; Tous et al., 2021). In schema therapy, this improvement may be attributed to the

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restructuring of core beliefs such as "I am powerless" or "The world is unsafe," which often drive avoidance behaviors among trauma survivors (Spirou et al., 2022). In psychological debriefing, by contrast, the improvement in coping appears to emerge from immediate emotional ventilation and normalization of trauma responses within a supportive group context (Baum et al., 2025; Mousavi et al., 2024). This immediate emotional processing enables participants to integrate the traumatic memory into a coherent narrative, reducing internal conflict and the need for avoidance.

The observed decline in emotional arousal symptoms across both intervention groups further reinforces the efficacy of structured trauma-focused approaches in mitigating hyperarousal—a key symptom cluster of PTSD characterized by heightened physiological reactivity, irritability, and sleep disturbance (Brzozowska & Grabowski, 2025). In schema therapy, emotional arousal is addressed indirectly through cognitive restructuring and experiential reprocessing that reduce schema-driven affective intensity. For example, participants learn to reinterpret intrusive thoughts and bodily sensations as manageable experiences rather than uncontrollable threats, thereby restoring regulatory control over physiological responses. This aligns with findings by (Parkes, 2021), who observed a significant reduction in hyperarousal among individuals undergoing schema therapy for complex trauma. Similarly, psychological debriefing fosters emotional normalization through immediate catharsis and psychoeducation, enabling participants to understand hyperarousal as a normal post-trauma response rather than a sign of personal dysfunction (Baum et al., 2025; Tous et al., 2021).

The comparable effectiveness of both interventions in this study may be explained by their shared mechanisms of emotional processing and cognitive reframing. Although schema therapy is more extensive and targets long-standing maladaptive schemas, psychological debriefing can also promote meaningful cognitive change when conducted in a structured and supportive environment (Baum et al., 2025; Handelsalt et al., 2022). Both approaches allow participants to revisit the traumatic experience in a safe therapeutic context, process associated emotions, and reconstruct the event's meaning in ways that facilitate adaptation. This convergence supports the view proposed by (Omopo, 2024) that trauma interventions are most effective when they balance both emotional and cognitive dimensions of recovery. The significant changes in coping styles and arousal observed in this study may therefore reflect the complementarity of these mechanisms across distinct therapeutic paradigms.

Furthermore, the findings resonate with prior meta-analytic evidence confirming the efficacy of schema therapy for adolescents with trauma histories. (Bergold et al., 2024) found that schema-focused interventions produced large effect sizes for reductions in re-experiencing, avoidance, and hyperarousal symptoms, particularly in youth exposed to interpersonal trauma. Similarly, (Mousavi et al., 2024) reported that debriefing interventions significantly reduced postnatal PTSD and improved emotional adaptation by fostering emotional ventilation and social support. These convergent findings suggest that both interventions are effective in addressing trauma-related symptomatology across populations and settings when implemented by trained professionals following structured protocols.

The reduction in avoidance coping observed in this study is particularly noteworthy because avoidance is often a major barrier to trauma recovery. Avoidant coping prevents individuals from confronting distressing emotions, thereby maintaining intrusive symptoms and perpetuating maladaptive schema activation (Spirou et al., 2022). By engaging participants in structured recall and reflection, both schema therapy and debriefing likely diminished avoidance tendencies through graded exposure and supportive group processing. This interpretation aligns with (Tous et al., 2021), who found that psychological debriefing produced immediate reductions in avoidance and anxiety levels among individuals recently exposed to trauma.

Moreover, the absence of significant differences between schema therapy and psychological debriefing in this study suggests that both interventions can be effectively tailored to adolescent populations despite their theoretical differences. Adolescents may particularly benefit from the emotional immediacy of debriefing and the structured self-awareness processes of schema therapy, given their ongoing cognitive and emotional development (Giroux & Sciolla, 2024). Schema therapy may offer more sustainable changes by restructuring core schemas, whereas debriefing may serve as an early stabilization tool that prevents symptom escalation after trauma exposure. The results thus support an integrated intervention model where psychological debriefing acts as a precursor to schema-focused therapy for sustained recovery.

The neuropsychological mechanisms underlying these improvements can also be contextualized through emerging evidence linking emotional regulation and neural plasticity in trauma recovery. (Brzozowska & Grabowski, 2025)

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emphasized that therapeutic interventions targeting both hyperarousal and dissociation can restore balance within the limbic system, particularly between the amygdala and prefrontal cortex. Schema therapy's emphasis on emotional re-scripting and cognitive restructuring likely fosters such neural integration by reducing fear conditioning responses. Likewise, debriefing's emotional ventilation component may reduce sympathetic nervous system activation, mitigating sustained hyperarousal and promoting parasympathetic recovery (Avci, 2025). These physiological improvements may explain the observed reductions in arousal symptoms across both experimental groups.

The significant gains in problem-focused coping further indicate that trauma survivors can develop constructive behavioral repertoires when provided with structured psychoeducational and cognitive training. Schema therapy's cognitive restructuring techniques and debriefing's normalization components both encourage active engagement with stressors rather than passive avoidance. This finding is in line with (Peters et al., 2022), who demonstrated that schema therapy enhances problem-solving skills through increased metacognitive awareness. Similarly, (Baum et al., 2025) reported that structured debriefing protocols improved stress management competencies and clinical performance among healthcare professionals by reinforcing active coping mechanisms. Thus, both modalities may facilitate behavioral activation through different yet complementary pathways.

The current study also contributes to the growing literature supporting early and integrative intervention for trauma in adolescents. (Bergold et al., 2024) emphasized that early psychotherapeutic engagement significantly reduces chronic PTSD onset in youth, while (World Health, 2024) highlighted the need for immediate and accessible trauma interventions for adolescents exposed to sexual violence. This research echoes those recommendations by demonstrating that both schema therapy and psychological debriefing can be feasibly implemented in community-based crisis settings such as social emergency centers. The comparable effectiveness of the two approaches underscores the flexibility of evidence-based interventions in addressing the multifaceted needs of adolescent trauma survivors.

In sum, the findings of this study align with existing empirical literature affirming that both psychological debriefing and schema therapy are effective modalities for mitigating PTSD symptoms and fostering adaptive coping among adolescent girls who have experienced sexual abuse. While schema therapy offers a deeper restructuring of maladaptive schemas and long-term cognitive change, psychological debriefing provides immediate emotional stabilization and normalization of trauma responses. The convergence of outcomes between the two approaches supports their potential integration within a stepped-care model, where debriefing serves as an initial intervention followed by schema-focused therapy for sustained emotional regulation and resilience (Baum et al., 2025; Handelsalt et al., 2022).

5. Limitations & Suggestions

Despite its valuable contributions, the present study is subject to several limitations. First, the relatively small sample size (N = 45) limits the generalizability of the findings to broader adolescent populations. The participants were recruited from a single social emergency center, which may not fully represent the diversity of trauma experiences or sociocultural contexts of adolescents in other regions. Second, the reliance on self-report questionnaires could introduce response biases such as social desirability or underreporting of symptoms due to stigma surrounding sexual trauma. Third, although random assignment was used, the absence of long-term follow-up data limits the understanding of the interventions' durability over time. Finally, while both schema therapy and psychological debriefing were implemented following established protocols, variations in facilitator competence or participant readiness may have influenced treatment outcomes.

Future studies should aim to replicate these findings using larger and more diverse samples to enhance external validity. Longitudinal designs are recommended to assess the persistence of therapeutic gains and identify factors contributing to long-term recovery. Additionally, future research should employ mixed-methods approaches that incorporate qualitative interviews to capture the subjective experience of trauma recovery and coping transformation. Neurobiological assessments, such as cortisol levels or functional neuroimaging, could further elucidate the physiological mechanisms underlying the observed reductions in hyperarousal. Moreover, comparative studies examining the integration of psychological debriefing as a preparatory phase for schema therapy would offer valuable insights into optimizing trauma intervention sequencing.

Clinicians working with adolescent survivors of sexual abuse are encouraged to employ structured trauma-informed interventions that combine emotional processing with cognitive restructuring. Psychological debriefing can be

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effectively applied as an early crisis intervention to reduce acute distress, while schema therapy can be implemented in later stages to address deep-seated maladaptive schemas and promote sustained emotional resilience. Practitioners should ensure a supportive and nonjudgmental environment that fosters emotional safety and empowerment. Integrating family psychoeducation and peer support groups may further enhance recovery by reinforcing adaptive coping and social connectedness. Ultimately, adopting a flexible, developmentally attuned, and evidence-based approach can significantly improve psychological outcomes for adolescents exposed to sexual trauma.

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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. This study was derived from the first author's doctoral dissertation and was approved by the Ethics Committee of the Islamic Azad University, Tabriz Branch, under the ethical code IR.IAU.K.REC.1403.612.

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.

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