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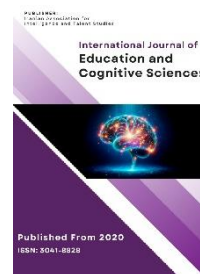
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Comparison of the Effectiveness of Self-Compassion Therapy and Trauma-Focused Cognitive Behavioral Therapy on Symptom Severity and Cognitive Biases in Individuals with Posttraumatic Stress Disorder Related to the Civil War in Iraq

Ahmed. Radhi Khaleefah¹, Sajjad. Basharpour^{2*}, Nader. Hajloo², Akbar. Atadokht²

¹ PhD Student, Department of Psychology, Faculty of Educational Sciences and Psychology, Mohagheh Ardabili University, Ardabil, Iran

² Professor, Department of Psychology, Faculty of Educational Sciences and Psychology, Mohagheh Ardabili University, Ardabil, Iran

* Corresponding author email address: basharpour_sajjad@gmail.com

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ABSTRACT

Purpose: This study aimed to compare the effectiveness of self-compassion therapy and trauma-focused cognitive behavioral therapy (TF-CBT) in reducing symptom severity and modifying cognitive biases among survivors of war in Iraq.

Methods and Materials: This experimental study employed a multi-group pretest–posttest design. A total of 60 individuals with posttraumatic stress disorder (PTSD) related to the Iraqi civil war were randomly assigned to two intervention groups (self-compassion therapy and trauma-focused cognitive behavioral therapy) and one control group (waiting-list control). The research instruments included the Mississippi Scale for PTSD and the Davos Assessment of Cognitive Biases Scale. Data were analyzed using multivariate analysis of covariance (MANCOVA) and the Bonferroni post hoc test in SPSS version 26.

Findings: The results indicated that both interventions significantly reduced symptom severity and cognitive biases ($p < .05$). The Bonferroni post hoc test further showed that trauma-focused cognitive behavioral therapy was significantly more effective than self-compassion therapy ($p < .05$).

Conclusion: The findings demonstrated that both self-compassion therapy and trauma-focused cognitive behavioral therapy significantly reduced symptom severity and cognitive biases in individuals with war-related PTSD, whereas no significant changes were observed in the control group. Furthermore, comparison of the two interventions indicated that trauma-focused cognitive behavioral therapy was more effective than self-compassion therapy in reducing both symptom severity and cognitive biases.

Keywords: self-compassion therapy, trauma-focused cognitive behavioral therapy, symptom severity, cognitive bias, individuals with war-related posttraumatic stress disorder

1. Introduction

War and prolonged armed conflict constitute some of the most severe forms of human adversity because they expose individuals not only to discrete traumatic events but also to persistent threats involving death, injury, displacement, bereavement, destruction of social structures, loss of livelihood, and uncertainty regarding personal and family safety. The psychological consequences of such exposure frequently extend beyond the immediate period of conflict and may remain clinically significant for years after the traumatic events have ended. Posttraumatic stress disorder (PTSD) is among the most extensively documented psychiatric consequences of war exposure and is characterized by intrusive recollections, avoidance of trauma-related stimuli, persistent negative alterations in cognition and mood, and heightened arousal and reactivity. Epidemiological evidence indicates that the burden of PTSD and other common mental disorders is considerably elevated in populations exposed to armed conflict compared with populations living under non-conflict conditions. A major systematic review and meta-analysis conducted for the World Health Organization demonstrated that the prevalence of mental disorders in conflict-affected settings is substantially higher than previously estimated, underscoring the major public-health consequences of war and organized violence (Charlson et al., 2019). Similarly, meta-analytic evidence concerning adult civilian war survivors has shown substantial rates of both PTSD and depression among individuals who remain in war-affected regions, indicating that continued residence in environments characterized by instability and trauma exposure can maintain psychological vulnerability long after initial traumatic experiences (Morina et al., 2018). At the global level, the absolute number of adult war survivors living with PTSD or major depression has been estimated to be extremely large, emphasizing that war-related psychopathology represents not merely an individual clinical problem but a major international mental-health challenge (Hoppen & Morina, 2019).

The psychological burden associated with conflict is particularly important when exposure is chronic, repeated, or embedded within an environment of continuing insecurity. Contemporary evidence from populations experiencing active or recent armed conflict shows that war-related stressors are strongly associated with both PTSD and more complex posttraumatic symptom profiles. Research conducted among Ukrainian students living in Kyiv during

the Russian-Ukrainian war demonstrated that cumulative war-related stressors were associated with symptoms corresponding to both PTSD and complex PTSD, illustrating how ongoing conflict can affect individuals across developmental and social groups (Lotzin et al., 2023). Comparable findings have been reported in other conflict-affected settings. A systematic review and meta-analysis of Ethiopian populations residing in war-affected communities documented a substantial prevalence of PTSD and highlighted the enduring psychological consequences of exposure to violence, displacement, and insecurity (Tinsae et al., 2024). These findings are highly relevant to survivors of the Iraqi civil war, many of whom have experienced repeated exposure to armed violence, loss, forced displacement, and disruption of social and family systems. War-related trauma may also reverberate across interpersonal and family relationships. A recent systematic review of parent-child relationships in the context of war-related trauma found that traumatic exposure can alter emotional availability, attachment-related processes, parenting functioning, and the broader relational environment within families (Chasson et al., 2025). Consequently, effective treatment of war-related PTSD requires attention not only to overt symptom reduction but also to the emotional, cognitive, and interpersonal processes through which trauma continues to exert its effects.

One of the most important mechanisms implicated in the persistence of PTSD is the presence of maladaptive trauma-related cognitions and cognitive biases. Following traumatic experiences, individuals may develop rigid and negatively valenced beliefs concerning the self, other people, the world, safety, responsibility, vulnerability, and the likelihood of future threat. These interpretations can heighten vigilance, intensify emotional distress, and interfere with corrective learning. Cognitive biases may include preferential attention to threat, inflexible beliefs, jumping to conclusions, externalizing attributions, maladaptive interpretations of ambiguous situations, difficulties in social cognition, subjective cognitive concerns, and safety behaviors that prevent disconfirmation of threatening expectations. A systematic review of cognitive biases among military personnel with and without PTSD found consistent evidence that PTSD is associated with alterations in attention, interpretation, memory, and other cognitive-processing domains, suggesting that biased information processing represents an important feature of trauma-related psychopathology (Vyas et al., 2023). Longitudinal evidence further indicates that cognitive biases and PTSD symptoms

may influence one another over time. In children and adolescents, different forms of cognitive bias have been shown to be longitudinally related to PTSD symptoms, supporting the view that distorted cognitive processing is not simply a secondary consequence of distress but may contribute to the persistence and development of posttraumatic symptoms (Geng et al., 2026).

The significance of cognitive bias extends beyond PTSD and appears to represent a broader mechanism of vulnerability across psychopathological conditions. Research examining childhood trauma and psychotic-like experiences has shown that cognitive biases can mediate or contribute to the relationship between traumatic experiences and later psychological symptoms (Nabizadeh Asl et al., 2020). More recent work has similarly demonstrated that cognitive biases interact with personality and affective vulnerabilities in predicting psychotic-like experiences among adolescents exposed to childhood trauma (Xi et al., 2025). These findings support a transdiagnostic perspective in which trauma can influence subsequent psychological functioning partly through persistent distortions in attention, interpretation, belief formation, and self-evaluation. The development of maladaptive post-trauma cognitions is also affected by pre-existing assumptions and the degree of cognitive flexibility available to the individual. Experimental evidence suggests that rigid pre-trauma assumptions and reduced cognitive flexibility can increase the likelihood of maladaptive cognitive processing following trauma exposure (McClements et al., 2025). Such evidence is particularly relevant to individuals exposed to war, for whom chronic threat may repeatedly reinforce assumptions that the environment is unsafe and that vigilance and avoidance are necessary for survival. Therefore, interventions capable of modifying trauma-related cognitive biases may produce meaningful reductions in PTSD symptom severity.

Trauma-focused cognitive behavioral therapy represents one of the best-established psychological approaches for directly addressing the emotional and cognitive consequences of traumatic experiences. Trauma-focused cognitive-behavioral interventions typically combine psychoeducation, emotion-regulation training, relaxation, cognitive restructuring, exposure to trauma-related memories or reminders, development of a trauma narrative, and modification of maladaptive beliefs concerning the traumatic event and its consequences. These interventions are designed to reduce avoidance while promoting more adaptive processing of trauma-related memories and beliefs.

A substantial body of research has established cognitive-behavioral approaches as effective treatments for PTSD across a range of clinical populations (Forbes et al., 2020). Importantly, evidence suggests that trauma-focused cognitive-behavioral interventions can remain beneficial even when individuals continue to live under conditions of ongoing threat. A systematic review of trauma-focused cognitive-behavioral therapies delivered in contexts of continued danger found that such interventions can produce clinically meaningful improvements despite the presence of persistent environmental stressors, although treatment may require sensitivity to actual ongoing threats (Ennis et al., 2021). This is particularly relevant for populations exposed to prolonged military conflict or political instability, in which the distinction between remembered threat and current threat may be psychologically complex.

The effectiveness of trauma-focused cognitive behavioral therapy has continued to receive empirical support across populations and trauma types. A recent review of TF-CBT for children and young people exposed to maltreatment documented substantial evidence for reductions in trauma-related symptoms and associated psychological difficulties (Cox et al., 2025). Meta-analytic findings have likewise shown that TF-CBT is effective not only in reducing PTSD symptoms but also in improving co-occurring depressive symptoms, suggesting that its benefits extend beyond the core PTSD syndrome (Lenz & Hunnicutt Hollenbaugh, 2026). Emerging research has additionally examined culturally responsive adaptations of trauma-focused CBT. For example, a comparison of standard trauma-focused CBT with Islamic trauma-focused CBT among Muslim earthquake survivors showed that culturally integrated approaches can be effective in reducing PTSD symptoms and highlighted the importance of cultural fit in trauma treatment (Çınaroğlu, 2026). This consideration may be particularly important for Iraqi war survivors, whose cultural, religious, social, and collective understandings of suffering may influence how traumatic experiences are interpreted and how treatment is received.

At a mechanistic level, one of the major strengths of TF-CBT lies in its direct targeting of maladaptive trauma-related cognitions. Recent work examining changes during TF-CBT has shown that reductions in maladaptive trauma-related beliefs and changes in emotional activation are closely associated with improvement in posttraumatic stress symptoms (Birkeland et al., 2025). This suggests that the effectiveness of TF-CBT is not attributable solely to repeated discussion of the traumatic event, but rather to

structured modification of the meanings attached to trauma and to the emotional responses elicited by those meanings. Contemporary developments in PTSD treatment further emphasize the central role of trauma-focused cognitive-behavioral mechanisms. For example, recent proposals have explored the integration of MDMA-assisted psychotherapy with trauma-focused cognitive-behavioral treatment in an attempt to enhance therapeutic engagement and trauma processing (Rothbaum & Schnurr, 2025). At the same time, novel biological approaches such as personalized functional magnetic resonance imaging-guided transcranial magnetic stimulation targeting threat-related neural circuitry are being investigated as possible treatments for PTSD (van Rooij et al., 2026). Although such developments demonstrate rapid innovation in PTSD intervention science, structured psychological treatments remain essential because they are comparatively accessible, scalable, and directly address the cognitive and emotional processes that maintain symptoms.

Alongside trauma-focused cognitive-behavioral approaches, self-compassion has increasingly emerged as an important therapeutic construct in trauma-related psychopathology. Self-compassion involves responding to personal suffering with kindness rather than harsh self-criticism, recognizing suffering as part of shared human experience rather than as evidence of personal defectiveness or isolation, and maintaining balanced mindful awareness rather than becoming overwhelmed by painful thoughts and emotions. Contemporary theory and research identify self-compassion as a multidimensional psychological resource that can support emotion regulation, resilience, adaptive self-evaluation, and psychological well-being (Neff, 2023). These characteristics are highly relevant to PTSD, in which individuals may experience guilt, shame, self-blame, emotional avoidance, and negative beliefs about personal weakness or responsibility. A systematic review examining self-compassion, trauma, and PTSD found consistent evidence that greater self-compassion is associated with lower posttraumatic stress symptomatology, suggesting that compassionate self-relating may protect against or reduce trauma-related distress (Winders et al., 2020).

Self-compassion may be particularly beneficial because it targets processes that are not always fully addressed by symptom-focused interventions. Trauma survivors frequently struggle not only with fear but also with shame, guilt, self-condemnation, and persistent negative self-appraisal. Compassion-based interventions may reduce these difficulties by changing the manner in which individuals relate to painful memories, emotions, and self-

referential thoughts. Recent findings from MDMA-assisted therapy for PTSD have shown that increases in self-compassion can mediate treatment-related improvement, providing evidence that self-compassion may represent an active psychological mechanism through which trauma symptoms are reduced (Agin-Liebes et al., 2025). Among veterans, higher self-compassion has also been shown to weaken the association between PTSD severity and suicidal ideation severity, suggesting a potentially protective role in individuals experiencing severe posttraumatic distress (Somohano et al., 2025). Compassion-based therapy has additionally been proposed as a promising intervention for adolescent PTSD, particularly because it may address shame, self-criticism, and emotional dysregulation that frequently accompany traumatic experiences (Brinckman et al., 2024).

The potential relevance of self-compassion to cognitive bias is also increasingly evident. Compassion-based processes may facilitate greater cognitive flexibility by reducing defensive responding, harsh self-evaluation, and automatic threat interpretations. Research on cognitive vulnerability to depression has shown that self-compassion-focused therapy can reduce maladaptive cognitive vulnerability, supporting the possibility that compassionate self-relating alters dysfunctional patterns of thought rather than affecting emotional distress alone (Farhadi et al., 2023). Similarly, cognitive bias modification combined with self-compassion imagery has demonstrated beneficial effects on maladaptive evaluative concerns, suggesting that self-compassion may enhance the modification of biased cognition by changing the emotional context in which self-referential information is processed (Jang & Choi, 2025). The relationship between self-compassion and cognitive distortion has also been supported in other areas of psychopathology. For example, self-compassion has been found to play a meaningful role in associations among cognitive distortions, social anxiety, and maladaptive eating-related behavior (Kurtoğlu et al., 2025). Although these studies were not conducted specifically among war survivors, they indicate that self-compassion may influence cognitive processes that are relevant to the persistence of trauma symptoms.

A broader therapeutic perspective likewise suggests that effective psychological intervention should move beyond the elimination of symptoms toward restoration of adaptive self-functioning, meaning, flexibility, and personally valued living. Integrative approaches to psychotherapy have increasingly emphasized self-development, self-

actualization, and the cultivation of adaptive internal resources rather than focusing exclusively on pathology reduction (Ozturk, 2025). Within trauma treatment, this perspective is consistent with interventions that strengthen self-compassion, resilience, emotional regulation, and meaningful engagement with life. Community-based approaches to PTSD prevention and recovery similarly emphasize the importance of resilience, social resources, and culturally situated coping processes in reducing the impact of trauma (Karunaratna et al., 2024). For survivors of war, who may face not only individual symptoms but also losses in social identity, community stability, and interpersonal trust, strengthening internal compassionate resources may therefore complement interventions that more directly restructure trauma-related beliefs.

Clinical research with veterans also supports the importance of targeting multiple dimensions of posttraumatic functioning. Narrative exposure therapy, for example, has been shown to improve posttraumatic symptoms, interpersonal reactivity, and negative affect among veterans with PTSD, indicating that effective trauma interventions can produce changes across emotional, interpersonal, and cognitive domains (Khorsand Nobahar et al., 2023). Such findings are relevant because war-related PTSD is rarely confined to a single symptom cluster. Individuals may simultaneously experience intrusive memories, emotional dysregulation, interpersonal withdrawal, heightened threat perception, rigid beliefs, and safety-seeking behavior. Accordingly, evaluating treatments solely on the basis of global PTSD severity may obscure meaningful differences in how interventions affect specific psychological mechanisms. Examination of cognitive biases alongside symptom severity may provide a more comprehensive understanding of treatment effects and may clarify whether improvement results primarily from emotional soothing, cognitive restructuring, exposure-based processing, or a combination of these mechanisms.

Despite growing evidence supporting both trauma-focused cognitive behavioral therapy and self-compassion-based interventions, direct comparisons between these approaches remain limited, particularly among adults with PTSD associated with war and civil conflict. TF-CBT directly targets trauma-related memories, distorted beliefs, avoidance, and conditioned emotional responses, whereas self-compassion therapy primarily seeks to transform self-criticism, shame, emotional avoidance, and the individual's relationship with suffering. Both approaches may therefore reduce PTSD symptoms and maladaptive cognitive

processing, but they do so through partially distinct therapeutic pathways. This distinction has important clinical implications. If both interventions are effective but TF-CBT produces greater changes in trauma-related cognitive biases, this would support the centrality of direct cognitive restructuring and trauma processing. Conversely, if self-compassion therapy produces comparable effects, it would suggest that modifying the emotional and self-relational context surrounding traumatic memories may be sufficient to generate substantial cognitive and symptomatic improvement. Clarifying these differential effects is particularly important in war-affected populations, in whom trauma-related beliefs may be deeply reinforced by repeated exposure to real danger and by the social consequences of conflict.

Accordingly, the aim of the present study was to compare the effectiveness of self-compassion therapy and trauma-focused cognitive behavioral therapy in reducing PTSD symptom severity and cognitive biases among individuals with posttraumatic stress disorder related to the Iraqi civil war.

2. Methods and Materials

2.1. Study Design and Participants

The present study employed an experimental, multi-group pretest–posttest design with two active intervention groups and one waiting-list control group. The independent variable was treatment condition at three levels: self-compassion therapy, trauma-focused cognitive behavioral therapy (TF-CBT), and waiting-list control. The dependent variables were the severity of posttraumatic stress disorder (PTSD) symptoms and cognitive biases. The statistical population consisted of individuals with PTSD associated with exposure to the Iraqi civil war who were referred to the Veterans and Martyrs Affairs Organization in Babol, Iran, during 2025–2027. Initially, 250 individuals were recruited through purposive sampling based on referrals from the organization and completed the screening instruments in the presence of the researcher. Individuals who obtained scores above the relevant screening cutoffs and met the eligibility criteria were subsequently assessed for inclusion. PTSD diagnosis was established according to the diagnostic criteria of the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) and was confirmed by a psychiatrist. From among eligible individuals, 60 participants were randomly selected for the study and subsequently allocated through simple random assignment,

using a random-number procedure, to one of three conditions: self-compassion therapy, trauma-focused cognitive behavioral therapy, or waiting-list control. To maintain consistency with the total sample size of 60, each group consisted of 20 participants. The inclusion criteria were direct or indirect exposure to war or war-related consequences, fulfillment of diagnostic and questionnaire-based criteria for war-related PTSD, provision of written informed consent to participate, and willingness to remain actively involved throughout the intervention. The exclusion criteria consisted of absence from more than two treatment sessions and voluntary withdrawal from treatment or the study. Following group allocation, all participants completed the pretest measures of PTSD symptom severity and cognitive bias. The two experimental groups then received their respective interventions, whereas the control group received no psychological intervention during the study period and remained on a waiting list. After completion of the intervention phase, the same instruments were administered to all three groups as posttest measures. The study was initiated after obtaining the required approval from the university ethics committee and authorization from the Veterans and Martyrs Affairs Organization in Babol. All participants provided written informed consent. Ethical principles included confidentiality of personal and research information, the right to withdraw from the study at any stage without penalty, protection of participants' welfare throughout the research process, and provision of psychological treatment to participants in the waiting-list control condition after completion of the study.

2.2. Data Collection Tools

The Mississippi Scale for Combat-Related Posttraumatic Stress Disorder was used to assess the severity of PTSD symptoms associated with war exposure. The scale was developed on the basis of diagnostic criteria for posttraumatic stress symptoms and was introduced by Norris and Reed (1997); its Persian version was subsequently validated by Goodarzi (2003). The instrument consists of 39 items covering several clinically relevant dimensions, including intrusive memories, difficulties in interpersonal relationships, impaired emotional control, and depressive symptomatology. The intrusive-memory domain comprises Items 4, 7, 13, 14, 18, 29, 33, 36, 37, and 39; interpersonal difficulties are assessed by Items 1, 5, 6, 19, 22, 28, 30, 35, and 38; impaired emotional control is assessed by Items 3, 16, 20, 23, 24, 25, 26, 27, 31, and 32; and the remaining

items assess depressive and related affective symptoms. Responses are scored on a five-point Likert scale, with scoring direction reversed for designated items. Item scores are summed to obtain an overall index of PTSD symptom severity, with higher scores representing more severe posttraumatic symptomatology. Administration requires approximately 15 minutes. Previous psychometric investigations have reported strong reliability and diagnostic performance for the instrument, including a test-retest reliability coefficient of .97, Cronbach's alpha of .94, sensitivity of .93, and overall classification efficiency of .90. In the Persian validation study, Goodarzi (2003) reported an internal consistency coefficient of .92, split-half reliability of .92, one-week test-retest reliability of .91, and a criterion-related coefficient of .82. More recently, Khorsand Nobahar et al. (2023) reported a Cronbach's alpha coefficient of .91, further supporting the internal consistency of the scale.

The Davos Assessment of Cognitive Biases Scale (DACOBS) was used to assess cognitive biases. This self-report instrument was developed by van der Gaag et al. (2013) to measure cognitive processes and biases that may contribute to maladaptive interpretations, emotional distress, and psychopathological symptoms. The DACOBS consists of 42 items rated on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree), with higher scores indicating greater endorsement of dysfunctional cognitive biases. Factor-analytic evaluation of the scale identified seven dimensions: jumping to conclusions, belief inflexibility, attention to threat, external attribution bias, social cognition problems, subjective cognitive problems, and safety behaviors. Together, these dimensions accounted for approximately 45% of the total variance in the original validation study. The instrument has demonstrated satisfactory psychometric characteristics, including a Cronbach's alpha coefficient of .90, split-half reliability of .92, and test-retest reliability of .86. In a Persian-language psychometric investigation, Nabizadeh Asl et al. (2020) reported a Cronbach's alpha coefficient of .89 for the subscales of the instrument, indicating adequate to strong internal consistency for the assessment of cognitive biases in Persian-speaking populations.

2.3. Interventions

The first experimental group received self-compassion therapy based on the therapeutic framework proposed by Neff (2011). The intervention consisted of eight 75-minute

sessions conducted twice weekly. The first session introduced the conceptual foundations of compassion-based treatment, the role of compassion in psychological functioning and everyday life, the basic principles of the intervention, and the relationship between compassionate responding and emotion-regulation systems, with particular attention to interactions between evolutionarily older threat-related processes and higher-order cognitive systems. The second session focused on mindfulness practice, awareness of suffering in the present moment, and development of a compassion-based case formulation addressing current symptoms, contextual factors, the influence of previous life experiences, principal threats and fears, safety strategies, and the unintended consequences of those strategies. During the third session, participants practiced compassionate imagery directed toward the self and others, receiving compassion from others, safe-place imagery, and the two-chair technique, with the aim of promoting flexible and compassionate communication among different aspects of the self and strengthening empathy, sympathy, and sensitivity toward personal suffering. The fourth session focused on developing a compassionate identity, cultivating a compassionate mind, and strengthening habitual compassionate self-responding. The fifth session addressed the management of difficult emotions and affective experiences, increasing awareness of persistent struggles with depression, anxiety, psychological pain, and interpersonal suffering, and using creative hopelessness and a non-blaming perspective to reduce shame and maladaptive self-criticism. The sixth session emphasized living more deeply and consistently with personally meaningful values, clarifying valued goals, making health-oriented choices, and identifying core values that provide meaning and direction in life. The seventh session focused on changing interpersonal patterns, exploring alternative ways of responding to difficult situations, reducing experiential avoidance and excessive control strategies, strengthening compassionate behaviors characterized by wisdom, courage, strength, and kindness, and increasing behavioral engagement with difficult or feared situations. The eighth session targeted persistent negative biases in interpreting life experiences, encouraged greater attention to strengths and positive aspects of life, and assisted participants in becoming active agents in defining meaningful goals and pathways across important life domains, including work, family life, social relationships, education, physical health, spirituality, community participation, and recreation. At the end of the final session, the main skills taught throughout treatment

were reviewed, participants were encouraged to continue practicing self-compassion strategies independently, and the posttest assessments were administered.

The second experimental group received trauma-focused cognitive behavioral therapy based on the treatment model described by Cohen et al. (2006). The intervention was delivered in eight 60-minute sessions, with two sessions conducted each week. The first session focused on introducing group members and the therapist, establishing therapeutic rapport, discussing group rules and expectations, obtaining commitment to regular attendance, introducing the treatment rationale, and completing the pre-intervention assessment. The second session provided psychoeducation concerning trauma, common psychological and physiological reactions to traumatic events, and the nature of posttraumatic stress symptoms, with the aim of normalizing trauma-related responses and preparing participants for subsequent trauma-focused work. The third session focused on affect-modulation skills, including identifying emotions, labeling and rating emotional intensity, recognizing trauma-related emotional responses, and learning strategies to regulate distressing affect. The fourth session introduced relaxation and physiological self-regulation techniques, particularly progressive muscle relaxation and deep breathing, while explaining the rationale for relaxation and the role of physiological arousal in maintaining trauma-related distress. The fifth session addressed cognitive coping skills and the relationships among thoughts, emotions, behaviors, and consequences. Participants were taught to identify maladaptive automatic thoughts, distinguish thoughts from feelings and behavioral responses, and employ thought-stopping and other cognitive coping techniques when distressing trauma-related cognitions emerged. The sixth and seventh sessions concentrated on identifying and modifying trauma-related cognitive distortions. Participants developed a narrative of their traumatic experiences, identified thinking errors embedded in their trauma narratives, challenged automatic and dysfunctional interpretations, generated more balanced and adaptive responses, and practiced coping strategies for managing trauma reminders and re-establishing a sense of self-control following exposure to trauma-related memories. The eighth session involved sharing and processing the trauma narrative, discussing the emotional and interpersonal consequences of narrating traumatic experiences, strengthening strategies for environmental and personal safety, reviewing therapeutic goals and acquired skills, consolidating treatment gains, planning for continued

application of coping strategies, formally terminating the intervention, and completing the posttest assessment. Throughout the intervention, emphasis was placed on reducing avoidance, modifying maladaptive trauma-related cognitions, improving emotional regulation, and increasing participants' perceived control over trauma reminders and associated distress.

Participants assigned to the waiting-list control condition did not receive either of the active psychological interventions during the intervention period. They completed the same pretest and posttest assessments as participants in the two experimental groups and were instructed to continue their routine activities without beginning a new structured psychological treatment specifically targeting PTSD during the study period. Maintaining the control group on a waiting list made it possible to estimate changes associated with the passage of time and repeated assessment and to compare these changes with those observed following the two active interventions. To address ethical considerations, participants in the control group were offered access to an appropriate psychological intervention after completion of posttest data collection.

2.4. Data Analysis

Data were analyzed using IBM SPSS Statistics version 26. Descriptive statistics, including the mean and standard deviation, were calculated for PTSD symptom severity and cognitive-bias scores at the pretest and posttest stages for each of the three study groups. Before conducting inferential analyses, the data were examined for the statistical assumptions required for covariance-based multivariate

analysis, including the distribution of scores, the presence of extreme values, homogeneity of variances and covariance matrices, linear relationships among dependent variables, and homogeneity of regression slopes. To test the overall effects of treatment condition while statistically controlling for baseline differences in the dependent variables, multivariate analysis of covariance (MANCOVA) was performed using posttest PTSD symptom severity and cognitive-bias scores as the dependent variables, treatment group as the fixed factor, and corresponding pretest scores as covariates. When the overall multivariate effect was statistically significant, follow-up univariate covariance analyses were examined to determine the effect of treatment condition on each outcome separately. Bonferroni-adjusted post hoc pairwise comparisons were subsequently conducted to identify specific differences among the self-compassion therapy, trauma-focused cognitive behavioral therapy, and waiting-list control groups while controlling for inflation of the Type I error rate associated with multiple comparisons. Statistical significance was evaluated at an alpha level of .05.

3. Findings and Results

Descriptive statistics were first calculated to examine changes in war-related posttraumatic stress disorder (PTSD) symptom severity and cognitive biases across the three study groups from pretest to posttest. Table 1 presents the means and standard deviations for the PTSD dimensions and total score, as well as the cognitive-bias dimensions and total score, separately for the self-compassion therapy, trauma-focused cognitive behavioral therapy (TF-CBT), and waiting-list control groups.

Table 1

Means and Standard Deviations of PTSD Symptom Severity and Cognitive-Bias Scores at Pretest and Posttest Across the Three Groups

Outcome	Assessment	Self-Compassion Therapy M (SD)	TF-CBT M (SD)	Control M (SD)
PTSD symptom severity				
Intrusive memories	Pretest	23.45 (3.12)	23.67 (3.28)	23.52 (3.05)
	Posttest	17.23 (2.87)	14.56 (2.42)	23.48 (3.03)
Interpersonal relationship difficulties	Pretest	21.38 (2.94)	21.52 (3.11)	21.43 (2.87)
	Posttest	15.74 (2.53)	13.28 (2.18)	21.39 (2.85)
Impaired emotional control	Pretest	19.27 (2.76)	19.41 (2.89)	19.32 (2.81)
	Posttest	13.85 (2.34)	11.47 (2.05)	19.30 (2.79)
Lack of depression	Pretest	16.47 (2.35)	16.58 (2.42)	16.51 (2.38)
	Posttest	11.92 (2.14)	9.83 (1.76)	16.49 (2.36)
Total PTSD score	Pretest	80.57 (4.23)	81.18 (4.35)	80.78 (4.17)
	Posttest	58.74 (3.95)	49.14 (3.28)	80.66 (4.12)
Cognitive biases				
Jumping to conclusions	Pretest	23.45 (2.34)	23.67 (2.41)	23.52 (2.28)
	Posttest	18.72 (2.05)	15.23 (1.78)	23.47 (2.29)

Belief inflexibility bias	Pretest	22.38 (2.15)	22.52 (2.24)	22.43 (2.08)
	Posttest	17.56 (1.94)	14.18 (1.65)	22.40 (2.09)
Attention-to-threat bias	Pretest	24.15 (2.42)	24.33 (2.51)	24.21 (2.37)
	Posttest	19.34 (2.18)	16.05 (1.89)	24.19 (2.38)
External attribution bias	Pretest	21.72 (2.08)	21.89 (2.17)	21.78 (2.03)
	Posttest	16.89 (1.87)	13.72 (1.58)	21.75 (2.04)
Social cognition problems	Pretest	23.89 (2.37)	24.05 (2.45)	23.94 (2.32)
	Posttest	18.95 (2.12)	15.84 (1.83)	23.91 (2.33)
Subjective cognitive problems	Pretest	22.56 (2.11)	22.74 (2.23)	22.63 (2.07)
	Posttest	17.63 (1.96)	14.51 (1.72)	22.60 (2.08)
Safety behaviors	Pretest	21.34 (2.04)	21.49 (2.12)	21.41 (2.01)
	Posttest	16.42 (1.84)	13.36 (1.54)	21.39 (2.02)
Total cognitive-bias score	Pretest	161.49 (3.28)	162.69 (3.41)	161.92 (3.35)
	Posttest	125.51 (2.95)	103.89 (2.63)	161.71 (3.32)

As shown in Table 1, the three groups had relatively similar mean scores at pretest, whereas substantial between-group differences emerged at posttest. The total PTSD score decreased from 80.57 to 58.74 in the self-compassion therapy group, representing a reduction of 21.83 points, and from 81.18 to 49.14 in the TF-CBT group, representing a reduction of 32.04 points. In contrast, the control group exhibited virtually no change, with the mean score decreasing only from 80.78 to 80.66. A similar pattern was observed across all PTSD dimensions, including intrusive memories, interpersonal relationship difficulties, impaired emotional control, and lack of depression. Descriptively, the largest reductions were consistently observed in the TF-CBT group. Cognitive-bias scores followed the same general pattern. The total cognitive-bias score decreased by 35.98 points in the self-compassion therapy group, from 161.49 to 125.51, and by 58.80 points in the TF-CBT group, from 162.69 to 103.89, whereas the control group demonstrated a negligible reduction of 0.21 points. Improvements were apparent across all seven cognitive-bias dimensions, particularly attention-to-threat bias and safety behaviors. The generally smaller posttest standard deviations in the two intervention groups also suggested greater concentration of scores around the improved post-intervention means.

Before conducting the covariance analyses, the relevant assumptions concerning equality of covariance matrices and homogeneity of error variances were examined. For the PTSD dimensions, Box's M test was nonsignificant, Box's

$M = 24.36$, $F = 1.18$, $p = .27$, indicating that the variance-covariance matrices could be considered homogeneous across the three groups. Levene's tests were likewise nonsignificant for intrusive memories ($p = .29$), interpersonal relationship difficulties ($p = .42$), impaired emotional control ($p = .35$), and lack of depression ($p = .47$), supporting the assumption of homogeneity of error variances. For the cognitive-bias dimensions, Box's M test was also nonsignificant, Box's $M = 28.47$, $F = 1.15$, $p = .31$, and Levene's tests were nonsignificant for all seven dimensions, with p values of .43, .33, .46, .29, .40, .35, and .39, respectively. Thus, the tested assumptions were adequately satisfied. The subsequent multivariate analysis of covariance showed a significant overall group effect for PTSD dimensions across all multivariate criteria: Pillai's trace = .642, $F(8, 108) = 18.53$, $p = .001$, $\eta^2 = .578$; Wilks' $\lambda = .412$, $F(8, 106) = 16.27$, $p = .001$, $\eta^2 = .551$; Hotelling's trace = 1.235, $F(8, 104) = 20.14$, $p = .001$, $\eta^2 = .608$; and Roy's largest root = .894, $F(4, 55) = 22.45$, $p = .001$, $\eta^2 = .620$. A significant multivariate group effect was also found for the cognitive-bias dimensions: Pillai's trace = .584, $F(14, 102) = 15.42$, $p = .001$, $\eta^2 = .523$; Wilks' $\lambda = .452$, $F(14, 100) = 13.86$, $p = .001$, $\eta^2 = .485$; Hotelling's trace = 1.128, $F(14, 98) = 16.95$, $p = .001$, $\eta^2 = .552$; and Roy's largest root = .834, $F(7, 54) = 18.23$, $p = .001$, $\eta^2 = .573$. These results justified examination of the follow-up univariate ANCOVA effects.

Table 2

Univariate ANCOVA Results for Posttest PTSD Symptom Severity and Cognitive-Bias Scores After Controlling for Pretest Scores

Outcome	Source	SS	df	MS	F	p	η^2
PTSD symptom severity							
Intrusive memories	Pretest	42.15	1	42.15	28.34	< .001	.332
	Group	58.46	2	29.23	19.65	< .001	.405

Interpersonal relationship difficulties	Pretest	38.72	1	38.72	25.63	< .001	.305
	Group	52.91	2	26.46	17.52	< .001	.375
Impaired emotional control	Pretest	45.83	1	45.83	32.17	< .001	.358
	Group	64.27	2	32.14	22.56	< .001	.438
Lack of depression	Pretest	36.24	1	36.24	23.85	< .001	.291
	Group	48.51	2	24.26	15.97	< .001	.354
Cognitive biases							
Jumping to conclusions	Pretest	38.42	1	38.42	25.63	< .001	.305
	Group	52.13	2	26.06	17.38	< .001	.374
Belief inflexibility bias	Pretest	35.12	1	35.12	23.42	< .001	.287
	Group	48.72	2	24.36	16.25	< .001	.358
Attention-to-threat bias	Pretest	41.23	1	41.23	27.51	< .001	.318
	Group	57.34	2	28.67	19.12	< .001	.395
External attribution bias	Pretest	33.75	1	33.75	22.51	< .001	.278
	Group	45.86	2	22.93	15.29	< .001	.342
Social cognition problems	Pretest	39.84	1	39.84	26.57	< .001	.312
	Group	54.21	2	27.10	18.08	< .001	.382
Subjective cognitive problems	Pretest	36.92	1	36.92	24.63	< .001	.295
	Group	50.83	2	25.41	16.95	< .001	.368
Safety behaviors	Pretest	34.61	1	34.61	23.08	< .001	.282
	Group	47.15	2	23.58	15.73	< .001	.352

As presented in Table 2, after statistically controlling for pretest scores, the effect of group membership was significant for every PTSD dimension. Significant group effects were found for intrusive memories, $F = 19.65$, $p < .001$, $\eta^2 = .405$; interpersonal relationship difficulties, $F = 17.52$, $p < .001$, $\eta^2 = .375$; impaired emotional control, $F = 22.56$, $p < .001$, $\eta^2 = .438$; and lack of depression, $F = 15.97$, $p < .001$, $\eta^2 = .354$. The effect sizes indicated that approximately 35.4% to 43.8% of the variance in posttest PTSD component scores was associated with treatment-group membership after adjustment for baseline scores. The largest group effect was observed for impaired emotional control ($\eta^2 = .438$), whereas the smallest was found for lack of depression ($\eta^2 = .354$). Significant group effects were also found for all cognitive-bias dimensions: jumping to conclusions, $F = 17.38$, $p < .001$, $\eta^2 = .374$; belief inflexibility bias, $F = 16.25$, $p < .001$, $\eta^2 = .358$; attention-to-threat bias, $F = 19.12$, $p < .001$, $\eta^2 = .395$; external attribution bias, $F = 15.29$, $p < .001$, $\eta^2 = .342$; social cognition problems, $F = 18.08$, $p < .001$, $\eta^2 = .382$; subjective

cognitive problems, $F = 16.95$, $p < .001$, $\eta^2 = .368$; and safety behaviors, $F = 15.73$, $p < .001$, $\eta^2 = .352$. Thus, group membership accounted for approximately 34.2% to 39.5% of the variance in the posttest cognitive-bias dimensions, with the largest effect observed for attention-to-threat bias. The significant pretest effects across all outcomes additionally indicated that baseline scores contributed significantly to prediction of posttest scores and supported their inclusion as covariates in the analyses.

Because the omnibus and univariate effects of group were statistically significant, Bonferroni-adjusted pairwise comparisons were conducted to determine which treatment conditions differed from one another. Table 3 presents the adjusted pairwise mean differences between TF-CBT and self-compassion therapy, between self-compassion therapy and the control condition, and between TF-CBT and the control condition. Negative mean differences indicate lower adjusted posttest scores, and therefore greater improvement, in the first group named in each comparison.

Table 3

Bonferroni-Adjusted Pairwise Comparisons of Posttest PTSD Symptom Severity and Cognitive-Bias Scores

Outcome	Pairwise Comparison	Mean Difference (I-J)	p
PTSD symptom severity			
Intrusive memories	TF-CBT – Self-compassion	-4.85	.003
	Self-compassion – Control	-6.35	< .001
	TF-CBT – Control	-11.20	< .001
Interpersonal relationship difficulties	TF-CBT – Self-compassion	-4.32	.005
	Self-compassion – Control	-5.68	< .001

	TF-CBT – Control	-10.00	< .001
Impaired emotional control	TF-CBT – Self-compassion	-5.15	.002
	Self-compassion – Control	-6.84	< .001
	TF-CBT – Control	-11.99	< .001
Lack of depression	TF-CBT – Self-compassion	-3.95	.008
	Self-compassion – Control	-5.12	< .001
	TF-CBT – Control	-9.07	< .001
Cognitive biases			
Jumping to conclusions	TF-CBT – Self-compassion	-4.25	.003
	Self-compassion – Control	-6.15	< .001
	TF-CBT – Control	-10.40	< .001
Belief inflexibility bias	TF-CBT – Self-compassion	-3.95	.005
	Self-compassion – Control	-5.85	< .001
	TF-CBT – Control	-9.80	< .001
Attention-to-threat bias	TF-CBT – Self-compassion	-4.65	.002
	Self-compassion – Control	-6.75	< .001
	TF-CBT – Control	-11.40	< .001
External attribution bias	TF-CBT – Self-compassion	-3.75	.008
	Self-compassion – Control	-5.45	< .001
	TF-CBT – Control	-9.20	< .001
Social cognition problems	TF-CBT – Self-compassion	-4.35	.004
	Self-compassion – Control	-6.35	< .001
	TF-CBT – Control	-10.70	< .001
Subjective cognitive problems	TF-CBT – Self-compassion	-4.15	.005
	Self-compassion – Control	-6.05	< .001
	TF-CBT – Control	-10.20	< .001
Safety behaviors	TF-CBT – Self-compassion	-3.85	.007
	Self-compassion – Control	-5.65	< .001
	TF-CBT – Control	-9.50	< .001

The Bonferroni-adjusted comparisons presented in Table 3 showed that both active interventions produced significantly lower adjusted posttest PTSD scores than the waiting-list control condition across all dimensions (all $p < .001$). Moreover, TF-CBT resulted in significantly lower scores than self-compassion therapy for intrusive memories ($MD = -4.85$, $p = .003$), interpersonal relationship difficulties ($MD = -4.32$, $p = .005$), impaired emotional control ($MD = -5.15$, $p = .002$), and lack of depression ($MD = -3.95$, $p = .008$). The largest difference between the two active interventions was observed for impaired emotional control, whereas the smallest was found for lack of depression. The same pattern emerged for cognitive biases. Both self-compassion therapy and TF-CBT were significantly more effective than the control condition across all seven cognitive-bias dimensions (all $p < .001$), while TF-CBT also produced significantly greater reductions than self-compassion therapy in jumping to conclusions ($MD = -4.25$, $p = .003$), belief inflexibility bias ($MD = -3.95$, $p = .005$), attention-to-threat bias ($MD = -4.65$, $p = .002$), external attribution bias ($MD = -3.75$, $p = .008$), social cognition problems ($MD = -4.35$, $p = .004$), subjective cognitive problems ($MD = -4.15$, $p = .005$), and safety

behaviors ($MD = -3.85$, $p = .007$). The greatest between-treatment difference for cognitive biases was observed for attention-to-threat bias, whereas the smallest was observed for external attribution bias. Taken together, the results demonstrated that both interventions were effective in reducing war-related PTSD symptoms and cognitive biases, but TF-CBT consistently produced larger improvements than self-compassion therapy across the assessed outcomes.

4. Discussion and Conclusion

The present study compared the effectiveness of self-compassion therapy and trauma-focused cognitive behavioral therapy (TF-CBT) in reducing posttraumatic stress disorder (PTSD) symptom severity and cognitive biases among individuals with war-related PTSD associated with the Iraqi civil war. The findings demonstrated that both interventions produced significant reductions in PTSD symptoms and cognitive biases compared with the waiting-list control condition. After controlling for pretest scores, significant between-group differences were observed in all dimensions of PTSD symptom severity, including intrusive memories, interpersonal relationship difficulties, impaired emotional control, and lack of depression, as well as in all

assessed dimensions of cognitive bias, including jumping to conclusions, belief inflexibility, attention to threat, external attribution bias, social cognition problems, subjective cognitive problems, and safety behaviors. However, the magnitude of improvement was consistently greater in the TF-CBT group than in the self-compassion therapy group. The largest treatment-related effect among the PTSD dimensions was observed for impaired emotional control, whereas attention-to-threat bias showed the largest group effect among the cognitive-bias dimensions. Bonferroni comparisons further indicated that both active interventions were superior to the control condition, while TF-CBT was significantly more effective than self-compassion therapy across all PTSD and cognitive-bias outcomes. These findings support the effectiveness of both approaches while indicating a comparative advantage for TF-CBT in the treatment of war-related PTSD.

The significant reduction in PTSD symptom severity following both interventions is consistent with the broader literature showing that structured psychological interventions can effectively reduce trauma-related symptoms even in populations exposed to severe or prolonged adversity. War survivors are particularly vulnerable to persistent PTSD because traumatic exposure is often cumulative and includes repeated confrontation with death, injury, bereavement, displacement, destruction, and ongoing insecurity. Meta-analytic evidence has shown that PTSD and depression are highly prevalent among civilian survivors who remain in war-affected regions (Morina et al., 2018), while global estimates indicate that a substantial number of adult war survivors experience clinically significant PTSD and depressive disorders (Hoppen & Morina, 2019). The elevated prevalence of mental disorders in conflict settings identified by the World Health Organization further emphasizes the need for effective and accessible interventions in populations exposed to warfare (Charlson et al., 2019). The present findings therefore extend previous research by demonstrating that even among individuals with PTSD associated with civil war, significant improvements can be achieved through both compassion-oriented and trauma-focused cognitive-behavioral approaches.

The effectiveness of TF-CBT in reducing overall PTSD severity and each of its symptom dimensions is strongly consistent with previous empirical and review evidence. Trauma-focused cognitive-behavioral interventions are among the most established treatments for PTSD and typically target maladaptive trauma memories, avoidance

patterns, hyperarousal, emotional dysregulation, and distorted beliefs through psychoeducation, exposure, cognitive restructuring, relaxation, and trauma narrative work (Forbes et al., 2020). A systematic review of trauma-focused cognitive-behavioral therapies under conditions of ongoing threat concluded that these treatments can remain effective even when individuals continue to experience environmental insecurity or recurrent danger (Ennis et al., 2021). This point is especially relevant to war-related PTSD, in which survivors may have experienced prolonged rather than isolated traumatic events. The present findings also correspond with recent meta-analytic evidence showing that TF-CBT significantly improves both PTSD and co-occurring depressive symptoms (Lenz & Hunnicutt Hollenbaugh, 2026). Similarly, evidence from trauma-exposed children and young people indicates that TF-CBT produces meaningful reductions in trauma-related psychological difficulties across different types of adversity (Cox et al., 2025). Although the populations differ, these findings collectively support the general effectiveness of trauma-focused cognitive-behavioral principles across trauma contexts.

The greater effectiveness of TF-CBT observed in the present study may be explained by its direct engagement with the cognitive and emotional mechanisms that maintain PTSD. Individuals exposed to war often interpret trauma through rigid beliefs concerning danger, helplessness, guilt, mistrust, vulnerability, and the permanence of threat. TF-CBT explicitly identifies, challenges, and modifies such beliefs while simultaneously reducing avoidance of trauma-related memories and cues. Recent evidence indicates that change in maladaptive trauma-related cognitions during TF-CBT is closely associated with reductions in posttraumatic stress symptoms, suggesting that cognitive restructuring constitutes an important mechanism of therapeutic improvement (Birkeland et al., 2025). The present findings are particularly consistent with this mechanism because TF-CBT produced greater reductions not only in PTSD severity but also in all measured cognitive biases. It therefore appears that direct cognitive modification, combined with repeated and regulated engagement with trauma memories, may have provided participants with more opportunities to revise dysfunctional beliefs and develop alternative interpretations of their traumatic experiences.

The significant reduction in intrusive memories following TF-CBT can also be explained through trauma-processing mechanisms. Intrusive memories are often maintained by fragmented trauma representations, avoidance, heightened

threat monitoring, and failure to integrate traumatic experiences into autobiographical memory. Through the development and processing of a trauma narrative, participants are repeatedly exposed to trauma-related material in a controlled therapeutic environment. This process can reduce the emotional intensity of trauma memories, facilitate their contextualization, and weaken conditioned associations between reminders and danger. Contemporary developments in PTSD treatment continue to emphasize the importance of trauma-focused processing. For example, efforts to integrate MDMA-assisted psychotherapy with trauma-focused cognitive-behavioral methods reflect continued interest in facilitating engagement with traumatic memories while reducing avoidance and overwhelming affect (Rothbaum & Schnurr, 2025). Likewise, emerging neurobiological interventions targeting threat-related neural circuitry illustrate the central importance of pathological threat processing in PTSD (van Rooij et al., 2026). Although such approaches differ substantially from TF-CBT, they converge on the principle that persistent trauma symptoms are partly sustained by dysregulated threat processing.

The improvement in emotional control observed in both treatment groups is also theoretically meaningful. Emotional dysregulation is common in PTSD and may include intense fear, anger, shame, guilt, sadness, and difficulty recovering from trauma reminders. TF-CBT directly addresses these processes through affect identification, emotion-regulation strategies, relaxation, deep breathing, and cognitive coping. This may explain why impaired emotional control demonstrated the largest group effect among PTSD dimensions. The effectiveness of self-compassion therapy can be understood through a somewhat different pathway. Self-compassion encourages individuals to respond to suffering with kindness, mindful awareness, and a sense of common humanity rather than self-criticism, isolation, or emotional overidentification (Neff, 2023). These processes may reduce secondary emotional reactions to trauma, particularly shame, self-blame, and harsh judgments about one's inability to cope. A systematic review has shown that greater self-compassion is consistently associated with lower trauma-related symptoms and may act as an important protective factor in PTSD (Winders et al., 2020). The reductions observed in the self-compassion group in the present study are therefore compatible with theoretical and empirical evidence linking compassionate self-responding with improved posttraumatic adjustment.

The effectiveness of self-compassion therapy is further supported by emerging clinical findings suggesting that increases in self-compassion may contribute directly to PTSD treatment response. In MDMA-assisted treatment for PTSD, self-compassion has been identified as a mediator of therapeutic effects, suggesting that the development of a less punitive and more supportive relationship with the self can contribute meaningfully to symptom reduction (Agin-Liebes et al., 2025). Self-compassion has also been shown to attenuate the relationship between PTSD severity and suicidal ideation among veterans, indicating that it may reduce the harmful consequences of severe posttraumatic distress (Somohano et al., 2025). Compassion-oriented interventions have additionally been proposed as promising approaches for trauma-exposed adolescents, particularly because they address shame, self-criticism, and difficulty tolerating painful emotional states (Brinckman et al., 2024). Thus, although self-compassion therapy was less effective than TF-CBT in the present study, its significant effect compared with the control condition supports its potential value as a therapeutic approach for war-related PTSD.

The reductions in interpersonal relationship difficulties following both interventions can similarly be interpreted in light of the interpersonal consequences of trauma. War-related trauma may disrupt trust, attachment, emotional availability, and perceptions of safety in close relationships. Systematic evidence indicates that war-related trauma can adversely affect parent-child relationships and broader relational processes, with effects extending beyond the directly traumatized individual (Chasson et al., 2025). Self-compassion therapy may improve interpersonal functioning indirectly by reducing shame, self-condemnation, and defensive responses, thereby increasing emotional openness and tolerance. TF-CBT, in turn, may improve relationships by reducing hypervigilance, misinterpretation of others' intentions, and avoidance behaviors that interfere with social engagement. Research among veterans has also shown that trauma-focused interventions such as narrative exposure therapy can improve interpersonal reactivity alongside posttraumatic symptoms and negative affect (Khorsand Nobahar et al., 2023). The present findings are therefore consistent with the view that successful PTSD treatment can influence both intrapersonal and interpersonal domains.

A particularly important finding was the significant reduction in cognitive biases following both interventions. Cognitive biases are increasingly recognized as mechanisms through which traumatic experiences may be maintained and translated into persistent psychopathology. A systematic

review involving military populations found that individuals with PTSD show abnormalities in attention, interpretation, and other forms of cognitive processing relative to those without PTSD (Vyas et al., 2023). Longitudinal evidence further suggests reciprocal associations between PTSD symptoms and cognitive biases, indicating that distorted information processing may both contribute to and be reinforced by trauma symptoms (Geng et al., 2026). In the present study, improvements were observed in jumping to conclusions, belief inflexibility, attention to threat, external attribution bias, social cognition problems, subjective cognitive difficulties, and safety behaviors. These findings suggest that both interventions may reduce the cognitive rigidity and threat-oriented processing characteristic of PTSD, although TF-CBT appears to exert a stronger effect.

The superiority of TF-CBT in reducing cognitive biases is understandable because cognitive restructuring is one of its central therapeutic components. Participants are explicitly taught to identify automatic thoughts, recognize cognitive distortions, evaluate evidence, generate alternative interpretations, and distinguish realistic danger from overgeneralized trauma-based threat expectations. These techniques may directly weaken belief inflexibility, external attribution tendencies, and jumping-to-conclusions patterns. The role of cognitive flexibility is particularly relevant, as evidence suggests that pre-existing assumptions and reduced cognitive flexibility can contribute to maladaptive post-trauma cognitive processes (McClements et al., 2025). Accordingly, the greater reduction in cognitive bias following TF-CBT may reflect improved flexibility in evaluating trauma-related thoughts and interpreting ambiguous information. This finding also corresponds with broader evidence that cognitive biases can mediate associations between traumatic experiences and later psychopathological manifestations (Nabizadeh Asl et al., 2020). Similar research has shown that trauma, cognitive bias, neuroticism, and depression interact in predicting psychotic-like experiences, further demonstrating that biased cognition is a clinically meaningful transdiagnostic process (Xi et al., 2025).

The particularly strong effect on attention-to-threat bias deserves specific consideration. Persistent attention to potentially threatening information is a core mechanism in PTSD because survivors often continue to scan their environment for danger even when objective threat has decreased. Such vigilance may have been adaptive during warfare but can become maladaptive when generalized across safe situations. TF-CBT may reduce this bias by

helping individuals differentiate past from present danger, challenge catastrophic expectations, and remain in situations that would otherwise be avoided. The use of relaxation and affect-regulation techniques may further weaken the association between ambiguous cues and physiological threat responses. The greater effect of TF-CBT on attention-to-threat bias therefore supports cognitive models in which persistent threat appraisal plays a central role in maintaining PTSD. At the same time, the improvement observed following self-compassion therapy suggests that compassionate attention to one's emotional experience may also reduce automatic threat processing by lowering self-criticism and defensive arousal.

Self-compassion may influence cognitive bias indirectly through its effects on cognitive and emotional flexibility. Research has shown that self-compassion-focused therapy can reduce cognitive vulnerability to depression, suggesting that compassionate self-relating changes maladaptive patterns of interpretation and self-evaluation (Farhadi et al., 2023). Furthermore, combining cognitive-bias modification with self-compassion imagery has been shown to improve maladaptive evaluative concerns, indicating that compassion may facilitate modification of biased cognitive processing (Jang & Choi, 2025). Self-compassion has also been associated with cognitive distortions and related emotional-behavioral difficulties in other clinical contexts (Kurtoglu et al., 2025). These findings help explain why self-compassion therapy significantly reduced cognitive biases in the present study even though cognitive restructuring was not its primary focus. By encouraging participants to observe distressing thoughts without overidentifying with them and to respond to psychological pain without harsh self-judgment, self-compassion may reduce the credibility and emotional force of maladaptive cognitions.

The comparative advantage of TF-CBT should therefore not be interpreted as evidence that self-compassion lacks clinical utility. Rather, the two interventions appear to operate through overlapping but distinguishable mechanisms. TF-CBT directly modifies trauma-related beliefs, fear responses, avoidance, and maladaptive interpretations, whereas self-compassion therapy primarily transforms the individual's relationship with suffering, self-criticism, and difficult emotional experiences. In cases where trauma-related cognitive distortions and threat processing are particularly prominent, the more direct cognitive and exposure-based components of TF-CBT may yield stronger symptom reduction. In contrast, self-compassion may be particularly valuable for individuals

whose trauma is characterized by intense shame, guilt, self-condemnation, or difficulty tolerating emotional pain. This interpretation is compatible with broader integrative perspectives emphasizing that effective psychotherapy should strengthen adaptive self-functioning and meaningful living in addition to reducing symptoms (Ozturk, 2025). It is also consistent with resilience-oriented approaches that emphasize psychological and social resources in recovery from trauma (Karunarathna et al., 2024). The present findings therefore suggest that TF-CBT may be preferred as a primary intervention for reducing war-related PTSD symptoms and cognitive biases, while self-compassion strategies may serve either as an alternative intervention or as a potentially useful complementary component within trauma-focused treatment.

Several limitations should be considered when interpreting the findings. First, the sample was relatively small and consisted of individuals with war-related PTSD recruited from a specific organizational and geographic context, which limits the extent to which the results can be generalized to all Iraqi war survivors, refugees, internally displaced persons, civilians, or veterans in other settings. Second, the study relied primarily on self-report measures of PTSD symptoms and cognitive biases, which may be affected by response tendencies, social desirability, current mood, and participants' interpretation of questionnaire items. Third, the design included only pretest and immediate posttest assessments; consequently, the persistence of therapeutic gains beyond the intervention period could not be determined. Fourth, the waiting-list control group did not receive an active comparison intervention, making it difficult to separate treatment-specific effects from nonspecific influences such as therapist attention, group support, expectancy, and repeated assessment. Fifth, participants' previous traumatic experiences, duration and severity of exposure to war, concurrent psychological difficulties, social support, medication use, and other contextual factors may have influenced treatment response but were not systematically examined as moderators.

Future studies should replicate these findings using larger and more heterogeneous samples drawn from different war-affected communities and should include refugees, civilians, military personnel, and displaced populations to improve generalizability. Longitudinal designs with follow-up assessments at several intervals would help determine whether improvements produced by self-compassion therapy and TF-CBT are maintained over time. Researchers should also incorporate clinician-administered diagnostic

interviews, behavioral measures of cognitive bias, physiological indicators of emotional arousal, and other multimethod assessments in addition to self-report instruments. Future trials would benefit from using active control conditions and examining potential mediators and moderators of treatment response, including self-compassion, cognitive flexibility, trauma-related guilt, shame, social support, type of trauma exposure, and baseline PTSD severity. Comparative and dismantling studies may also clarify which components of each intervention are responsible for therapeutic change. An especially useful direction would be to investigate integrated treatment protocols combining trauma-focused cognitive restructuring and exposure with self-compassion exercises to determine whether such a combined approach produces stronger or more durable outcomes than either treatment alone.

The findings have several implications for clinicians and mental-health services working with individuals affected by war-related PTSD. Trauma-focused cognitive behavioral therapy may be prioritized when prominent clinical features include intrusive memories, persistent threat perception, avoidance, cognitive distortions, emotional dysregulation, and extensive safety behaviors. Therapists should adapt trauma-focused interventions to the cultural, linguistic, religious, and social context of war survivors and carefully distinguish realistic concerns arising from current insecurity from trauma-related overgeneralization of danger. Self-compassion techniques may be particularly useful when clients demonstrate severe shame, self-blame, guilt, self-criticism, emotional avoidance, or difficulty tolerating trauma-related affect and may be incorporated as preparatory or adjunctive strategies within trauma-focused treatment. Services for war-affected populations should also provide adequate therapist training, structured screening, ongoing assessment of treatment response, and referral pathways for individuals with complex or comorbid presentations. Where resources permit, treatment plans should be individualized according to the dominant cognitive, emotional, and interpersonal mechanisms maintaining each person's PTSD rather than relying on a uniform intervention for all trauma survivors.

Authors' Contributions

All authors significantly contributed to this study.

Declaration

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

Transparency Statement

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

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

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

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