Psychological Trauma:
Theory, Research, Practice, and Policy

ISSN: 1942-9681

2022, Vol. 14, No. 3, 488–496
https://doi.org/10.1037/tra0001028

Gender Differences in the PTSD Symptoms of Polytraumatized Youth During Isolated Phases of Trauma-Focused Cognitive Behavioral Therapy

Sarah Ascienzo[1], Ginny Sprang[2], and David Royse[3]
[1] School of Social Work, North Carolina State University
[2] Department of Psychiatry and Executive Director, Center on Trauma and Children, University of Kentucky
[3] College of Social Work, University of Kentucky

Objective: Gender differences in the development and severity of PTSD have long been observed, but much less is known about gender differences within the context of trauma-focused treatment. This study investigated gender differences in the PTSD symptoms of polytraumatized youth during Trauma-focused Cognitive Behavioral Therapy (TF-CBT). ***Method:*** The sample included child welfare-involved youth ages 7–18 (N = 138) who experienced a mean of 4.78 types of trauma and received TF-CBT at a trauma treatment clinic. Mixed ANOVA analyses assessed gender differences in PTSD symptoms from baseline to termination of treatment. PTSD symptoms were then mapped according to the phase of treatment, and factorial ANOVAs examined gender differences during isolated phases of TF-CBT. Potential interactions with sexual violence history were considered. ***Results:*** Significant reductions in overall PTSD, intrusive, avoidance and arousal symptoms were found from baseline to termination of TF-CBT for the entire sample, although females reported higher symptom levels across all PTSD symptom domains. Significant gender differences were also revealed during some, but not all, phases of treatment, with variations among PTSD symptom domains noted. ***Conclusions:*** Findings suggest TF-CBT is effective in reducing PTSD in youth with poly-trauma exposure, irrespective of gender. Gender differences in symptom severity were revealed, however, and indicate the need to attend to gender within the context of treatment. Findings also suggest the use of measurement-based care, and specifically attending to symptom fluctuation in PTSD symptom domains during treatment, can help inform clinical decision making and individualize treatment.

Clinical Impact Statement
This study investigated gender differences in the PTSD symptoms of child welfare-involved and polytraumatized youth ages 7–18 from baseline to termination of Trauma-Focused Cognitive Behavioral Therapy (TF-CBT), as well as during isolated phases of treatment. Findings revealed significant reductions across all PTSD symptom domains for both males and females from the beginning to the end of treatment, although females exhibited higher levels of symptoms. Gender differences were also observed during some phases of treatment. Results can help guide clinical decision making, and reinforce the importance of attending to gender, individual PTSD symptom domains and symptom fluctuation during treatment.

Keywords: Trauma-Focused Cognitive Behavioral Therapy, Posttraumatic Stress Disorder, youth, gender, treatment

Since the inception of the field of traumatic stress, scholars have observed differences in the experiences of male and female trauma survivors, primarily in regard to their vulnerability to developing posttraumatic stress symptoms (PTSS) and the types of traumatic events they encounter. For instance, a large-scale meta-analysis that included studies with adult and adolescent samples found that females were nearly two times more likely to develop Posttraumatic Stress Disorder (PTSD) regardless of the type of study, population, or type of assessment tool used to measure symptomatology (Tolin & Foa, 2006). Studies among youth are consistent with these findings, and have demonstrated girls tend to endorse a greater frequency and severity of PTSD symptoms compared to boys (Breslau et al., 2004). In fact, in a meta-analysis of risk factors for the development of PTSD in youth, female gender was found to be a significant predictor of the disorder (Trickey et al., 2012).

More recently, attention has focused on whether there are also differences in the treatment outcomes of males and females.

This article was published Online First February 22, 2021.
Sarah Ascienzo https://orcid.org/0000-0002-8822-2243
Ginny Sprang https://orcid.org/0000-0002-0828-1105
David Royse https://orcid.org/0000-0001-5327-0854
Correspondence concerning this article should be addressed to Sarah Ascienzo, School of Social Work, NC State University, Campus Box 7639, Raleigh, NC 27695-7639, United States. Email: saascien@ncsu.edu

Within the youth trauma literature, these examinations have typically involved analysis of differences in symptom reduction from the beginning to the end of treatment. While these inquiries provide valuable information, there is great heterogeneity between studies and they have yielded mixed findings, making it challenging to draw conclusions. It also remains unclear how symptoms may fluctuate *during* treatment, including consideration of symptom decreases as well as increases. This line of inquiry may yield helpful information that is otherwise masked in analysis of total symptom reduction. Given this gap, this study sought to track PTSD symptom fluctuation during treatment, and examine gender differences that may exist.

Gender and Biological Sex Differences in PTSS

The term sex represents the biological characteristics of individuals, such as chromosomes, gene expression, sexual anatomy and hormone levels. Gender, on the other hand, indicates a more complex set of social and psychological constructs, including socially constructed roles, behaviors, and identities that do not necessarily correspond with one's biological sex (Lott & Maluso, 1993). Sex differences, such as differential activation of those systems that mediate the fight-flight-freeze response (Sherin & Nemeroff, 2011), may in part help to explain variations found between males and females with regard to PTSD prevalence and severity. However, gender no doubt also plays a role. For the purpose of this study, we focus on gender, rather than biological sex, to enable consideration of gender roles, norms and expectations as they may impact symptom fluctuation and severity during treatment.

Prior research has identified gender differences in posttrauma psychological responses. For instance, studies have found women and girls are more likely than men and boys to endorse peri-traumatic DSM–IV-TR PTSD Criterion A2 (i.e., exposure is accompanied by intense fear, helplessness, or horror; Breslau & Kessler, 2001; Tolin & Foa, 2006) and peri-traumatic dissociation (Bryant & Harvey, 2003; Dyb et al., 2008). This is notable given that psychological peri-traumatic reactions and peri-traumatic dissociation have been found to be predictive of and strongly associated with PTSD to a greater extent than the objective characteristics of the traumatic event (Ozer et al., 2003; Trickey et al., 2012). Similarly, gender differences in posttrauma cognitive appraisals, which have also been found to have a substantial influence on the development of PTSD (Ozer et al., 2003), have been observed. Researchers have found females generally tend to endorse higher levels of cognitive PTSD symptoms (Cox et al., 2014), and in particular report more concerns about personal safety (Kimerling et al., 2002); lower levels of perceived control (Dickerson & Kemeny, 2004); higher levels of self-blame (Tolin & Foa, 2002; Cox et al., 2014); are more likely to view the world as dangerous (Kimerling et al., 2002); and are more likely to hold negative views of themselves (Tolin & Foa, 2002; Cox et al., 2014). Gender socialization and prescribed gender roles also impact symptom expression and coping following trauma exposure. For example, female youth appear more likely to report internalizing symptoms, whereas males are more likely to report externalizing symptoms (Briere & Scott, 2006). Females also tend to express more relational emotion and less anger and aggression, while males tend to be more avoidant of disclosures of thoughts and feelings associated with traumatic events (Briere & Scott, 2006; Kimerling et al., 2002).

The gender-based differences in PTSS observed in the literature may also be moderated by trauma type. Using a nationally representative sample of over 4000 youth, Hanson and colleagues (2008) found that females who reported any type of trauma exposure were significantly more likely than males to meet criteria for PTSD. However, when trauma types were isolated, males who reported a history of child sexual abuse were more likely to endorse PTSD symptoms compared to females (Hanson et al., 2008); a finding consistent with results from Tolin and Foa (2006) meta-analysis. These findings point to the importance of attending to trauma type when examining gender-based differences in PTSS.

Additionally, much of the research investigating differences in PTSS to date has examined PTSD as a unidimensional concept, when it is characterized by distinct symptom clusters. As a result, it is possible that gender differences exist in individual symptom clusters but are muted when overall PTSD scores are examined. For example, Charak and colleagues (2014) found that females endorse higher levels of intrusive symptoms, but not other symptom clusters, while Bryant and Harvey (2003) found that females report higher levels of intrusive symptoms and avoidance compared to males. These findings are particularly notable considering different symptom presentations have implications for treatment (Runyon et al., 2014).

Gender and Trauma-Focused Treatment

Gender-based differences in treatment response have been observed, although findings are less consistent, and it is difficult to draw conclusions given the heterogeneity among studies. Several studies (Barron et al., 2013; Berger & Gelkopf, 2009); including three that utilized Trauma-Focused Cognitive Behavioral Therapy (TF-CBT; Cohen et al., 2004; Kane et al., 2016; Murray et al., 2013) have found that both boys and girls reported statistically significant reductions in PTSS following treatment, with no significant gender differences identified. Meanwhile, other studies (Berger et al., 2007; Kataoka et al., 2003); including one that included TF-CBT (Craig & Sprang, 2014) found that both boys and girls significantly benefited from treatment and exhibited similar levels of change, but also found that girls endorsed higher PTSD symptoms at baseline and end of treatment. Still other studies have found gender to moderate treatment outcomes. For example, Tol and colleagues (2012) examined the impact of the Classroom-Based Intervention, and results in one study indicated boys, but not girls, showed significant improvements in PTSS compared to a waitlist control. Conversely, in a different study using the same intervention, both girls and boys showed significant improvement in PTSS compared to a waitlist condition, but moderator analyses revealed girls exhibited larger treatment gains (Tol et al., 2008).

Symptom Fluctuation During Treatment

Very few studies have investigated symptom fluctuation during treatment, and none were located that explicitly considered gender. Deblinger and colleagues (2011) deconstructed TF-CBT to assess the relative effectiveness of particular components on symptom reduction. Specifically, children ages 4–11 who had experienced sexual abuse were randomly assigned to four groups: either 8 or 16 sessions with or without the trauma narrative and processing

components of treatment. Findings indicated that all four groups exhibited significant reductions in PTSS, but children in both the 8 and 16 session trauma narrative and processing groups reported less fear associated with thinking or talking about their traumatic experiences (Deblinger et al., 2011). However, both groups who received 16 sessions were rated as having fewer symptoms of reexperiencing and avoidance at termination. In a similar study, Salloum and Overstreet (2012) evaluated the differential effects of the Grief and Trauma Intervention. Children either received coping skills only, or coping skills with trauma narrative and processing components, and youth in both groups demonstrated significant improvement in PTSS (Salloum & Overstreet, 2012).

Trauma-Focused Cognitive Behavioral Therapy

TF-CBT (Cohen, et al., 2006; 2016) is one of the most widely disseminated and empirically supported trauma-focused interventions for youth (Cary & McMillan, 2012). The intervention is appropriate for youth ages 3–18 and their nonoffending caregivers, is short-term and typically ranges from 12–25 sessions, and includes sessions with the youth, parallel sessions with the nonoffending caregiver(s), and conjoint sessions with both the caregiver and child. TF-CBT is phase-based, and includes the components summarized by the PRACTICE acronym: Psychoeducation on trauma exposure and trauma reactions; trauma-informed Parenting skills; development of Relaxation skills; development of Affective identification and modulation strategies; development of Cognitive coping skills; construction of a Trauma narrative; In vivo exposure to trauma reminders; Cognitive processing of trauma narrative; Conjoint sessions with caregiver and youth to share and process the trauma narrative; and developing skills to Enhance safety and future development (see Cohen et al., 2006; 2016). TF-CBT is an ideal intervention to utilize when examining symptom fluctuation during treatment given its phase-based nature.

Purpose of Study

This study sought to (a) examine gender differences in symptom reduction from baseline to termination of treatment; (b) explore the fluctuation of PTSD symptoms (overall, intrusion, avoidance and arousal) during the phases of TF-CBT, and 3) examine whether there were gender differences in PTSD symptoms during isolated phases of treatment. Given studies indicating trauma type, and specifically sexual trauma, may impact the relationship between gender and PTSS, sexual violence was considered as a potential moderator.

Method

Participants

This study utilized data gathered from a clinical database of youth who received trauma-related services at a treatment clinic located in the southeastern region of the United States. Out of a possible 207 youth who began TF-CBT, 69 were excluded due to treatment attrition ($n = 60$) or missing data ($n = 9$), resulting in a total sample size of 138 youth ages 7–18 who completed TF-CBT and had valid baseline and termination scores. No statistically significant differences were found between treatment completers and noncompleters with regard to baseline assessment scores ($t[197] = -1.42$, $p = .157$). The mean age of participants was 11.21 (Median = 11.0, $SD = 3.09$), and as Table 1 reveals, the sample included slightly more females (58.0%) and was predominantly White (84.4%). All youth had child welfare involvement, and slightly over half of the sample (52.9%) were in the custody of the state and in foster care. The sample was polytraumatized and had experienced a mean of 4.78 ($SD = 2.33$) different types of trauma. In total, 47.01% ($n = 65$) of the sample experienced sexual violence, and chi square analysis (χ^2 [1, 138] = 6.39, $p = .011$) indicated significantly more females (56.3%, $n = 45$) experienced sexual violence compared to males (34.5%, $n = 20$). Data screening indicated no significant differences between males and females with regard to legal guardian ($\chi^2[3, 138] = 3.73$, $p = .293$), race ($\chi^2[1, 138] = 2.28$, $p = .131$), or number of trauma types ($t[1], 135) = –.47$, $p = .643$).

Measures

There were four primary outcomes of interest in this study, all of which were measured via scores on the University of California Los Angeles Posttraumatic Stress Disorder Reaction Index (UCLA-PTSD RI). The UCLA-PTSD RI is a child self-report instrument that assesses the diagnostic criteria of PTSD

Table 1
Descriptive Statistics of Sample at Baseline (N = 138)

	Demographic variable	%	*n*	Trauma types	%	*n*
Race	White	84.4	108	Impaired Caregiver	71.0	98
	African American/Black	28.0	30	Domestic Violence	64.5	89
	American Indian/Alaska Native	3.9	4	Neglect	66.7	92
	Asian	1.0	1	Physical Abuse	55.1	76
	Native Hawaiian/Pacific Islander	1.0	1	Traumatic Loss	51.4	71
Ethnicity	Hispanic/Latino	5.1	7	Emotional Abuse	47.8	66
	Non-Latino/Hispanic	92.7	127	Sexual Abuse	39.1	54
Gender	Male	42.0	58	Sexual Assault	17.4	24
	Female	58.0	80	Physical Assault	12.3	17
Custody	State	52.9	73	School Violence	9.4	13
	Biological Parent	29.0	40	Injury/Accident	8.7	12
	Other Relative	10.9	15	Illness/Medical	8.7	12
	Adoptive Parent	7.2	10	Forced Displacement	3.6	5

Note. Participants could select more than one race.

as outlined in the Diagnostic and Statistical Manual of Mental Disorders (*DSM–IV–TR*), as well as two other associated symptoms: guilt and fear of traumatic events reoccurring (Pynoos et al., 1998). The UCLA-PTSD RI includes 22 items that ask about the frequency of PTSD symptoms during the past month rated on a scale ranging from 0 (none of the time) to 4 (most of the time). An overall PTSD score is generated as well as subscale scores for each individual symptom domain. Scores on the overall PTSD scale range from 0 to 68, and a cutoff value of 38 for single incident traumatic exposure has a sensitivity of .93 and specificity of .87 in detecting PTSD (Rodriguez et al., 2001). Scores in the mid-20s indicate clinically-elevated PTSD symptoms appropriate for intervention (Rodriguez et al., 2001). For the symptom domain subscales, scores range from 0–20 on the intrusive and arousal scales, and from 0–28 on the avoidance scale. No clinical cutoff values have been established for the subscales. The measure has shown good test–retest reliability (.84), and good internal consistency (.90; Roussos et al., 2005).

Procedure

The institutional review board at the affiliated university approved this study. Youth were referred to services by caregivers or community professionals. Legal guardians provided informed consent, and assent was obtained from youth. Youth were deemed appropriate for TF-CBT if they had experienced at least one potentially traumatic event and presented with PTSD symptoms. Cross-sectional data are collected at baseline in order to establish pretreatment symptoms levels, every three months during treatment, and at the end of treatment.

Independent Variables

Gender and sexual violence history served as independent variables. Participants self-identify gender during the intake process (male, female, transgender, or other with a space to elaborate). Youth were considered to have experienced sexual violence if information collected during treatment indicated they had experienced child sexual abuse and/or sexual assault.

Data Analytic Plan

Data were screened prior to all analyses to ensure test assumptions were fulfilled, and a significance level of .05 was set a priori. A power analysis utilizing G*Power 3.1.9.2 indicated sample size was sufficient for all analyses to detect a medium effect with 80% power.

First, three-way mixed analysis of variance procedures were utilized to assess differences in symptoms from baseline to termination of TF-CBT. For each dependent variable, baseline and termination scores were entered as the within subjects factor, and gender (male/female) and sexual violence history (yes/no) were entered as between subject factors.

Next, PTSD symptom scores were mapped according to the phase of treatment the child was in at the data collection time point to provide a visual depiction of symptom fluctuation during treatment. For this procedure and the analyses that followed, the components of TF-CBT were collapsed into three phases, and in conjunction with baseline and termination scores, five phases of treatment were established: baseline, PRAC skills, trauma narrative, processing and integration, and termination. Baseline scores indicate youth's UCLA-PTSD RI scores at the beginning of treatment. The PRAC skills phase included psychoeducation and parenting skills, relaxation, affect expression, and cognitive coping I. In these components, the emphasis is on creating stability through the development of coping and parenting skills. Subsequently, the trauma narrative phase, which includes only the trauma narrative component, serves to gradually desensitize youth to traumatic content, and provides an opportunity for youth to identify their thoughts and feelings before, during and after the associated events (Cohen et al., 2006). The processing and integration phase includes cognitive coping and processing II, in vivo mastery of trauma reminders and conjoint sessions. In this phase, the focus shifts to affective and cognitive processing of the narrative, and youth engage in *in vivo* exposure as well as share their narratives with supportive caregivers. Termination indicates scores at the end of treatment, and after the final TF-CBT component enhancing safety and future development. This component includes future-oriented activities aimed at helping youth develop safety and advocacy skills.

Finally, to assess whether differences exist in the PTSS of males and females during isolated phases of TF-CBT, a series of factorial ANOVAs were conducted. For each dependent variable, a 2X2 factorial ANOVA was executed at each phase, with gender (male/female) and sexual violence history (yes/no) again entered as the between subject factors.

Results

PASW 22.0 was utilized for data analysis. Given the number of analyses conducted, statistical results are not provided for each analysis; however, detailed tables can be found in the archived supplemental materials. All test assumptions were fulfilled unless otherwise noted.

For the three-way mixed ANOVAs, results of preliminary correlational analyses indicated significant, but weak to moderate ($<.42$) correlations between baseline and termination scores for overall PTSD, intrusive, avoidance and arousal symptoms. Additionally, across all four dependent variables, no significant interactions were found, nor were any main effects for sexual violence revealed. However, significant main effects were observed for all four dependent variables, indicating treatment contributed to significant reductions across all symptom domains. Significant main effects for gender were also found, and as Table 2 illustrates, females began and ended treatment with higher levels of overall PTSD, intrusive, avoidance and arousal symptoms.

Next, UCLA-PTSD RI scores were mapped to the phase of treatment the participant was in at the time of data collection, and this procedure resulted in the following: baseline (N = 138), PRAC skills (N = 93), development of trauma narrative (N = 101), processing and integration (N = 75), and successful termination (N = 138). Visual inspection of line graphs illustrated in Figures 1–4 indicate an overall decrease in symptoms among both groups, with larger differences between males and females in the earlier phases of treatment. It is also of note that males reported an increase in overall PTSD, intrusive, avoidance, and arousal symptoms from the PRAC skills to trauma narrative phase of treatment. Females also reported a slight increase in symptoms from the

Table 2
Significant Main Effects and Descriptive Statistics for Three-Way Mixed ANOVAs

Effect	Sum of squares	*df*	*F*	*p*	Partial η^2	Gender	Baseline *M* (*SD*)	Termination *M* (*SD*)
Overall PTSD						All	26.26 (15.3)	11.80 (8.62)
PTSD	12,353.56	1	121.47	<.001	.475	Male	21.75 (13.47)	9.97 (7.93)
Gender	1,780.09	1	9.11	.003	.064	Female	29.53 (15.78)	13.14 (8.91)
Intrusive						All	7.20 (5.21)	2.13 (2.12)
Intrusive	1,515.98	1	133.54	<.001	.507	Male	5.82 (4.72)	1.57 (1.94)
Gender	154.65	1	8.01	.005	.058	Female	8.20 (5.35)	2.54 (2.17)
Avoidance						All	9.00 (6.45)	3.54 (3.30)
Avoidance	1,673.53	1	71.63	.000	.352	Male	7.47 (5.86)	2.98 (3.2)
Gender	217.44	1	7.72	.006	.055	Female	10.10 (6.66)	3.94 (3.34)
Arousal						All	8.96 (4.89)	5.33 (3.45)
Arousal	730.67	1	63.67	.000	.327	Male	8.00 (4.41)	4.63 (3.21)
Gender	127.21	1	5.33	.023	.039	Female	9.65 (5.13)	5.83 (3.55)

PRAC skills to the trauma narrative phase, but only for avoidance and arousal symptoms.

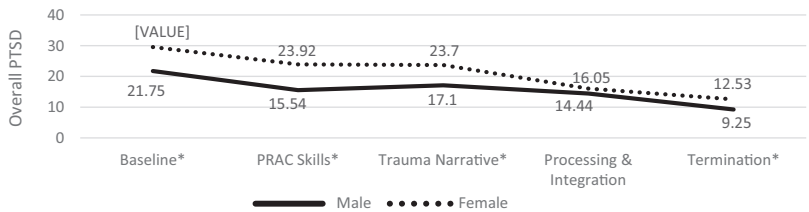
Finally, factorial ANOVAs were conducted for each dependent variable at isolated phases of treatment to assess gender differences, and to consider whether sexual violence history impacted the relationship between PTSD symptoms and gender. Due to violations of normality, including scores of kurtosis and skewness exceeding ±1, square root transformations were conducted for overall PTSD, avoidance and arousal scores at the trauma narrative phase, and for all four dependent variables at the processing and integration phase. These transformations yielded more normal distributions. Additionally, initial data screening for intrusive symptoms during the PRAC skills phase indicated that the assumption of homogeneity of variances was violated, and closer inspection revealed that the largest group variance and smallest group variance exceeded the recommended ratio of 3:1, suggesting that the analysis was not robust to this violation (Tabachnick & Fidell, 2007). A square root transformation was conducted, which enabled homogeneity of variance. In all analyses that included variables with data transformations, models were run with raw data and then again with transformed data, and descriptive statistics of the untransformed data are provided for ease of interpretation. Across all phases of treatment and all four dependent variables, and congruent with results from three-way mixed ANOVAs, there were no interactions between sexual violence and gender, nor were there main effects for sexual violence. However, main effects for gender were revealed during some, but not all, phases of treatment. Table 3 provides descriptive statistics for gender main effects, and more extensive tables are provided in archived online supplemental materials.

At baseline, there were significant gender differences across all four outcome variables. Specifically, with regard to overall PTSD symptoms, there was a main effect for gender (F[1, 134] = 8.03, p = .005, η_p^2 = .057), with females (M = 29.53, SD = 15.78) reporting significantly higher levels of PTSD symptoms at baseline compared to males (M = 22.45, SD = 4.6) for a mean difference of ±7.56 (SE = 2.67). Similarly, there was a significant main effect for intrusive symptoms (F[1, 134] = 5.43, p = .021, η_p^2 = .039), avoidance symptoms (F[1, 134] = 5.399, p = .022, η_p^2 = .039) and arousal symptoms (F[1, 134] = 4.53, p = .035, η_p^2 = .033) with females reporting significantly higher levels of symptoms compared to males in each analysis.

During the PRAC Skills components of treatment, a significant main effect for gender was observed for overall PTSD symptoms (F[1, 86] = 9.95, p = .002, η_p^2 = .104), with females (M = 23.92, SD = 12.21) reporting higher levels of overall PTSD symptoms compared to males (M = 15.54, SD = 11.34) for a mean difference of ±8.16 (SE = 2.59). The model accounted for 8.5% of variance. This trend held for intrusive symptoms (F[1, 86] = 14.26, p < .001, η_p^2 = .142), where the model accounted for 11.8% of variance; avoidance symptoms (F[1, 86] = 6.78, p = .011, η_p^2 = .073), where the model accounted for 6.2% of variance; and arousal symptoms (F[1, 86] = 4.05, p = .047, η_p^2 = .045), where the model only accounted for 1.9% of variance.

In the trauma narrative phase, significant main effects for gender were again found with regard to overall PTSD symptoms (F[1, 97] = 5.33, p = .023, η_p^2 = .052), with females (M = 23.7, SD = 13.98) reporting higher symptom levels compared to males (M = 17.09, SD = 14.58). The model accounted for 5.3% of variance in overall PTSD symptoms. Significant main effects for gender were

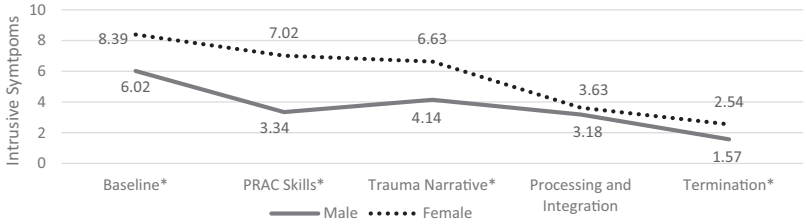
Figure 1
Symptom Progression for PTSD Scores During TF-CBT (R = 0–68)



Note. * denotes significant gender difference during phase of treatment.

Figure 2

Symptom Progression for Intrusive Scores During TF-CBT (R = 0–20)



Note. * denotes significant gender difference during phase of treatment.

also observed for intrusive symptoms (F[1, 97] = 4.136, p = .045, η_p^2 = .041) with 12.4% of variance explained, and avoidance symptoms (F[1, 97] = 5.27, p = .024, η_p^2 = .052), with 7.1% of variance explained. However, there were no longer significant differences in the arousal symptoms of males and females during the trauma narrative phase (F[1, 97] = .75, p = .39, η_p^2 = .008).

Interestingly, during the processing and integration phase of treatment, no significant gender differences in overall PTSD (F[1, 71] = .73, p = .395, η_p^2 = .010), intrusive (F[1, 71] = 1.10, p = .297, η_p^2 = .015), avoidance (F[1, 71] = .16, p = .689, η_p^2 = .002) or arousal scores (F[1, 71] = .16, p = .689, η_p^2 = .002) were revealed. Significant gender differences reappeared at termination with regard to overall PTSD (F[1, 130] = 4.91, p = .028, η_p^2 = .036) and intrusive symptoms (F[1, 130] = 6.75, p = .010, η_p^2 = .049), with females reporting higher symptom severity. Although, gender only accounted for 2.2% and 2.9% of variance in overall PTSD and intrusive scores at termination, respectively. There were not significant differences found between males and females with regard to avoidance (F[1, 130] = 2.491, p = .117, η_p^2 = .019) or arousal symptoms (F[1, 130] = 2.972, p = .087, η_p^2 = .022).

Discussion

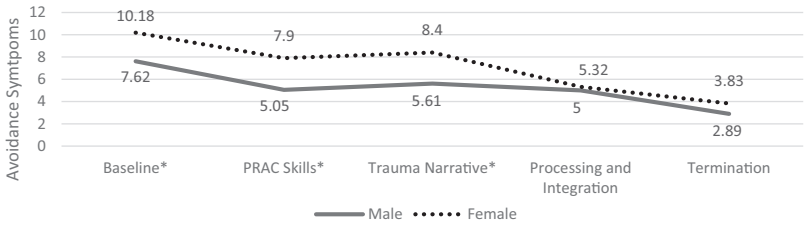
The purpose of this study was to map PTSD symptom fluctuation during the course of TF-CBT and examine gender differences in symptom severity during treatment as a whole, as well as during isolated phases of treatment. Consistent with prior research, findings support the effectiveness of TF-CBT in significantly decreasing PTSD symptoms among males and females ages 7–18. Results also lend support to the effectiveness of TF-CBT with child welfare-involved youth who have experienced chronic child maltreatment, including youth in the care of biological parent(s), in kinship care, in foster care, and in adoptive homes.

Furthermore, males and females in this sample exhibited significant reductions in overall PTSD, as well as intrusive, avoidance, and arousal symptoms from the beginning to completion of treatment. Symptom mapping procedures indicated a somewhat similar progression of symptoms, although nuanced differences were noted. Specifically, both groups experienced symptom decreases across all PTSD domains from baseline to the PRAC skills. These findings seem to indicate that the acquisition of coping skills during PRAC skills succeeded in diminishing PTSD symptoms, which is congruent with the emphasis on relaxation and grounding techniques during the PRAC skills phase of treatment. Further, statistically significant differences in the arousal symptoms of males and females were observed at baseline and during the PRAC skills, but ceased during subsequent phases of treatment, which may suggest PRAC skills were particularly effective in reducing arousal symptoms among females.

Symptoms slightly increased from the PRAC skills to the trauma narrative phase across all dependent variables for males, and for avoidance and arousal symptoms for females. One might expect symptoms to sustain or even increase during the trauma narrative phase given that youth engage in gradual exposure and directly discuss traumatic memories; however, this is nevertheless an important clinical finding. Youth, caregivers, and clinicians may interpret symptom increases during TF-CBT as an indication that treatment is not working, and therefore prematurely discontinue treatment or change interventions. However, findings from this study suggest that symptom increases, particularly during the trauma narrative phase, may be typical, and therefore not necessarily indicative of treatment failure. Furthermore, providing education on symptom fluctuation to caregivers and youth may better prepare them for treatment. With knowledge that symptoms may increase during the trauma narrative phase, clinicians can assist youth and their

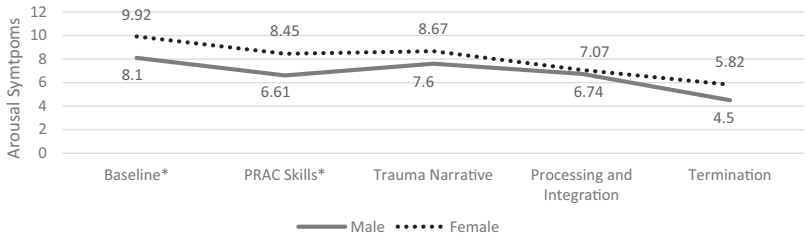
Figure 3

Symptom Progression for Avoidance Scores (R = 0–28)



Note. * denotes significant gender difference during phase of treatment.

Figure 4
Symptom Progression for Arousal Scores (R = 0–20)



Note. * denotes significant gender difference during phase of treatment.

caregivers in proactively implementing supports to help youth manage any symptom increases. This, in turn, may help to prevent treatment attrition. Among the entire sample, there were more marked decreases in symptoms from the trauma narrative to the processing and integration phase. Further, the substantial symptom reduction reported by girls during this phase led to the absence of any significant gender differences in symptom severity. These findings suggest that the processing and integration phase may be particularly beneficial for females. Taken as a whole, these findings are noteworthy given evidence that gradual exposure and processing techniques are often underutilized by clinicians (Becker et al., 2004) based on concerns that they are too distressing for clients and may lead to a worsening of symptoms (Cohen et al., 2006).

Among this sample, females reported experiencing sexual violence at higher rates than males, and this is consistent with prior research (Kimerling et al., 2002). In this sample, sexual violence did not moderate the relationship between gender and symptom severity. At first glance, these findings seem to contradict results from prior studies (Tolin & Foa, 2006; Trickey et al., 2012) that have found victims of sexual violence report higher rates of PTSD compared to other types of trauma. However, these disparate findings may potentiate due to the polyvictimized nature of this sample. That is, the heightened conditional risk of PTSD due to sexual violence may have been eclipsed by the cumulative effect of chronic interpersonal violence.

Implications

This study has implications for clinicians tasked with assessing and treating trauma-exposed youth. In addition to supporting the effectiveness of TF-CBT with polytraumatized youth, findings also point to the value of measurement-based care (MBC). MBC, also referred to as outcome or process monitoring, can enrich treatment effectiveness by enabling the course of treatment to be tailored to each youth's individual needs (Lambert et al., 2003). The use of assessment tools at the beginning—but also during—treatment can provide clinicians with valuable information concerning symptom fluctuation. This, in turn, can inform clinical decision making in real time and enable clinicians to individually target specific symptoms and behaviors. Findings also indicate the importance of attending to individual PTSD symptom domains. By doing so, clinicians can implement treatment components in a manner that explicitly targets specific symptom clusters. A child who exhibits substantial arousal symptoms, for example, may benefit from an increased focus on relaxation strategies during PRAC skills, while a child with strongly entrenched cognitive distortions may require greater attention during cognitive processing.

Limitations

While this study provides useful information concerning symptom progression and gender differences during isolated phases of TF-CBT, there are notable limitations. First, given the lack of random sampling, findings are not generalizable to any broader population. Furthermore, given that this sample experienced a mean of nearly five types of trauma, it is important to consider the degree to which these results reflect the symptomatology of children who have less pervasive trauma histories. Issues relating to sample size and power also limit the conclusions that can be drawn from this study, and future research that replicates this study with a larger sample may be able to detect meaningful but smaller effects that exist but were not identified due to power issues. This study utilized the DSM–IV-TR version of the UCLA PTSD-RI, and it will be

Table 3
Descriptive Statistics During TF-CBT Phases

Measure	Gender	Baseline *M* (*SD*)	PRAC skills *M* (*SD*)	Trauma narrative *M* (*SD*)	Processing & integration *M* (*SD*)	End of treatment *M* (*SD*)
PTSD	Male	22.45 (4.66)*	15.54 (11.34)*	17.09 (14.58)*	14.44 (12.38)	9.25 (7.05)*
	Female	29.53 (15.78)*	23.92 (12.21)*	23.70 (13.98)*	16.05 (12.57)	12.53 (8.14)*
Intrusive	Male	6.02 (4.87)*	3.34 (3.46)*	4.14 (5.48)*	3.18 (4.25)	1.57 (1.94)*
	Female	8.29 (5.43)*	7.02 (5.03)*	6.63 (4.73)*	3.63 (4.09)	2.54 (2.17)*
Avoidance	Male	7.79 (5.91)*	5.05 (5.01)*	5.61 (6.32)*	5.00 (4.99)	2.89 (3.16)
	Female	10.18 (6.65)*	7.9 (4.45)*	8.40 (6.26)*	5.32 (5.46)	3.83 (3.23)
Arousal	Male	8.10 (4.44)*	6.61 (4.27)*	7.59 (4.59)	6.74 (4.23)	4.54 (3.16)
	Female	9.92 (5.48)*	8.41 (4.32)*	8.67 (4.71)	7.07 (4.38)	5.82 (3.72)

Note. * indicates significant gender difference, $p < .05$.

informative to utilize the *DSM–5* version in future studies to examine whether differences exist in the negative alterations in cognition and mood symptom domain. This is particularly notable given that gender differences in posttrauma cognitive appraisals have been identified in previous studies (Cox et al., 2014; Kimerling et al., 2002; Tolin & Foa, 2002).

When evaluating this study's findings, consideration of gender role and socialization also beg the question of whether the differences observed in this study are in fact *real* differences, or differences in reporting. Given the self-report nature of the UCLA PTSD RI, it is important to consider whether the symptom levels reported by youth accurately measure and represent their psychological functioning with regard to PTSD, or whether they reflect efforts to provide responses that are congruent with perceived gender role expectations. For instance, are boys actually experiencing lower levels of PTSD symptoms during the course of TF-CBT, or does this reflect social desirability bias and/or perceived role expectations? These effects could be buffered in future studies through data triangulation, and specifically including other forms of assessment (i.e., caregiver- or clinician-report).

Finally, the study sample was comprised of youth who had successfully completed TF-CBT, and consequently did not consider how symptom fluctuation may differ for those who terminate treatment prematurely. Research on treatment attrition has identified a number of concrete and perceptual barriers that can contribute to treatment drop-out (McKay et al., 2001), and it is possible that the symptom trajectories of those who prematurely terminate treatment may differ from those who successfully complete all phases of treatment. As a result, it will be important to explore variations in the progression of symptoms between those who do and do not terminate treatment prematurely.

Conclusion

In sum, the high prevalence of trauma exposure among youth taken in tandem with the deleterious impact of that exposure on multiple domains of functioning necessitates that the field continue to develop trauma-informed systems of care that can supportively and effectively treat children and families. This study adds to the robust literature on childhood trauma and trauma-focused treatment, and in particular provides information concerning PTSD symptom fluctuation during TF-CBT, as well as illuminates gender differences within the context of treatment. Overall, and limitations notwithstanding, findings suggest examining symptom fluctuation and attending to gender differences within the context of treatment are important areas of investigation that can help inform clinical decision making and help improve service delivery.

References

Barron, I. G., Abdallah, G., & Smith, P. (2013). Randomized control trial of a CBT trauma recovery program in Palestinian schools. *Journal of Loss and Trauma*, *18*(4), 306–321. https://doi.org/10.1080/15325024.2012.688712

Becker, C. B., Zayfert, C., & Anderson, E. (2004). A survey of psychologists' attitudes towards and utilization of exposure therapy for PTSD. *Behaviour Research and Therapy*, *42*(3), 227–292. https://doi.org/10.1016/s0005-7967(03)00138-4

Berger, R., & Gelkopf, M. (2009). School-based intervention for the treatment of tsunami-related distress in children: A quasi-randomized controlled trial. *Psychotherapy and Psychosomatics*, *78*(6), 364–371. https://doi.org/10.1159/000235976

Berger, R., Pat-Horenczyk, R., & Gelkopf, M. (2007). School-based intervention for prevention and treatment of elementary-students' terror-related distress in Israel: A quasi-randomized controlled trial. *Journal of Traumatic Stress*, *20*(4), 541–551. https://doi.org/10.1002/jts.20225

Breslau, N., & Kessler, R. C. (2001). The stressor criterion in DSM-IV posttraumatic stress disorder: an empirical investigation. *Biological Psychiatry*, *50*(9), 699–704.

Breslau, N., Wilcox, H. C., Storr, C. L., Lucia, V. C., & Anthony, J. C. (2004). Trauma exposure and posttraumatic stress disorder: A study of youth in urban America. *Journal of Urban Health*, *81*(4), 530–544. https://doi.org/10.1093/jurban/jth138

Briere, J., & Scott, C. (2006). *Principles of Trauma Therapy: A Guide to Symptoms, Evaluation and Treatment*. Sage.

Bryant, R. A., & Harvey, A. G. (2003). Gender differences in the relationship between acute stress disorder and posttraumatic stress disorder following motor vehicle accidents. *The Australian and New Zealand Journal of Psychiatry*, *37*(2), 226–229. https://doi.org/10.1046/j.1440-1614.2003.01130.x

Cary, C. E., & McMillen, J. C. (2012). The data behind the dissemination: A systematic review of trauma-focused cognitive behavioral therapy for use with children and youth. *Children and Youth Services Review*, *34*(4), 748–757. https://doi.org/10.1016/j.childyouth.2012.01.003

Charak, R., Armour, C., Elklit, A., Angmo, D., Elhai, J. D., & Koot, H. M. (2014). Factor structure of PTSD, and relation with gender in trauma survivors from India. *European Journal of Psychotraumatology*, *5*(1), 25547. https://doi.org/10.3402/ejpt.v5.25547

Cohen, J. A., Deblinger, E., Mannarino, A. P., & Steer, R. A. (2004). A multisite, randomized controlled trial for children with sexual abuse–related PTSD symptoms. *Journal of the American Academy of Child & Adolescent Psychiatry*, *43*(4), 393–402. https://doi.org/10.1097/00004583-200404000-00005

Cohen, J. A., Mannarino, A. P., & Deblinger, E. (2006). *Treating trauma and traumatic grief in children and adolescents*. Guilford Press Press.

Cohen, J. A., Mannarino, A. P., & Deblinger, E. (2016). *Treating trauma and traumatic grief in children and adolescents*. Guilford Publications.

Cox, K. S., Resnick, H. S., & Kilpatrick, D. G. (2014). Prevalence and correlates of posttrauma distorted beliefs: Evaluating DSM-5 PTSD expanded cognitive symptoms in a national sample. *Journal of Traumatic Stress*, *27*(3), 299–306. https://doi.org/10.1002/jts.21925

Craig, C., & Sprang, G. (2014). Gender differences in trauma treatment: Do boys and girls respond to evidence-based treatments in the same way? *Violence and Victims*, *29*(6), 927–939. https://doi.org/10.1891/0886-6708.VV-D-13-00016

Deblinger, E., Mannarino, A. P., Cohen, J. A., Runyon, M. K., & Steer, R. A. (2011). Trauma-focused cognitive behavioral therapy for children: Impact of the trauma narrative and treatment length. *Depression and Anxiety*, *28*(1), 67–75. https://doi.org/10.1002/da.20744

Dickerson, S. S., & Kemeny, M. E. (2004). Acute stressors and cortisol responses: A theoretical integration and synthesis of laboratory research. *Psychological Bulletin*, *130*(3), 355–391. https://doi.org/10.1037/0033-2909.130.3.355

Dyb, G., Rodriguez, N.,Brymer, M. J., Saltzman, W. R., Steinberg, A. M., & Pynoos, R. S. (2008). Emotional reactions, peritraumatic dissociation, and posttraumatic stress reactions in adolescents. *Journal of Child & Adolescent Trauma*, *1*(1), 63–74. https://doi.org/10.1080/19361520801934423

Hanson, R. F., Self-Brown, S., Borntrager, C., Kilpatrick, D. G., W. B. Saunders, B. E., Resnick, H. S., & Amstadter, A. (2008). Relations among gender, violence exposure, and mental health: The national survey of adolescents. *American Journal of Orthopsychiatry*, *78*(3), 313–321. https://doi.org/10.1037/a0014056

Kane, J. C., Murray, L. K., Cohen, J., Dorsey, S., Skavenski van Wyk, S., Galloway Henderson, J., Imasiku, M., Mayeya, J., & Bolton, P. (2016). Moderators of treatment response to trauma-focused cognitive behavioral therapy among youth in Zambia. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *57*(10), 1194–1202. https://doi.org/10.1111/jcpp.12623

Kataoka, S. H., Stein, B. D., Jaycox, L. H., Wong, M., Escudero, P., Tu, W., Zaragoza, C., & Fink, A. (2003). A school-based mental health program for traumatized Latino immigrant children. *Journal of the American Academy of Child & Adolescent Psychiatry*, *42*(3), 311–318. https://doi.org/10.1097/00004583-200303000-00011

Kimerling, R., Ouimette, P., & Wolfe, J. (Eds.). (2002). *Gender and PTSD*. Guilford Press Press.

Lambert, M., Whipple, J., Hawkins, E., Vermeersch, D., Nielsen, S., & Smart, D. (2003). Is it time for clinicians to routinely track patient outcome? A meta-analysis. *Clinical Psychology: Science and Practice*, *10*(3), 288–301. https://doi.org/10.1093/clipsy.bpg025

Lott, B., & Maluso, D. (1993). The social learning of gender. In A. E. Beall & R. J. Sternberg (Eds.), *The psychology of gender* (pp. 99–126). Guilford Press Press.

McKay, M. M., Pennington, J., Lynn, C. J., & McCadam, K. (2001). Understanding urban child mental health service use: Two studies of child, family, and environmental correlates. *The Journal of Behavioral Health Services & Research*, *28*(4), 475–483. https://doi.org/10.1007/BF02287777

Murray, L. K., Cohen, J. A., & Mannarino, A. P. (2013). Trauma-focused cognitive behavioral therapy for youth who experience continuous traumatic exposure. *Peace and Conflict*, *19*(2), 180–195. https://doi.org/10.1037/a0032533

Ozer, E. J., Best, S. R.,Lipsey, T. L., & Weiss, D. S. (2003). Predictors of posttraumatic stress disorder and symptoms in adults: A meta-analysis. *Psychological Bulletin*, *129*(1), 52. https://doi.org/10.1037/0033-2909.129.1.52

Pynoos, R., Rodriguez, N., Steinberg, A., Stuber, M., & Frederick, C. (1998). *The University of California at Los Angeles Posttraumatic Stress Disorder Reaction Index (UCLA-PTSD RI) for DSM–IV (Revision 1)*. UCLA Trauma Psychiatry Program.

Rodriguez, N., Steinberg, A. S., Saltzman, W. S., & Pynoos, R. S. (2001, December). *PTSD Index: Psychometric analyses of the adolescent version*. In symposium at the annual meeting of the International Society for Traumatic Stress Studies, New Orleans, LA.

Roussos, A., Goenjian, A. K., Steinberg, A. M., Sotiropoulou, C., Kakaki, M., Kabakos, C., Karagianni, S., & Manouras, V. (2005). Posttraumatic stress and depressive reactions among children and adolescents after the 1999 earthquake in Ano Liosia, Greece. *The American Journal of Psychiatry*, *162*(3), 530–537. https://doi.org/10.1176/appi.ajp.162.3.530

Runyon, M. K., Deblinger, E., & Steer, R. A. (2014). PTSD symptom cluster profiles of youth who have experienced sexual or physical abuse. *Child Abuse & Neglect*, *38*(1), 84–90. https://doi.org/10.1016/j.chiabu.2013.08.015

Salloum, A., & Overstreet, S. (2012). Grief and trauma intervention for children after disaster: Exploring coping skills versus trauma narration. *Behaviour Research and Therapy*, *50*(3), 169–179. https://doi.org/10.1016/j.brat.2012.01.001

Sherin, J. E., & Nemeroff, C. B. (2011). Post-traumatic stress disorder: The neurobiological impact of psychological trauma. *Dialogues in Clinical Neuroscience*, *13*(3), 263–278. https://doi.org/10.31887/DCNS.2011.13.2/jsherin

Tabachnick, B. G., & Fidell, L. S. (2007). *Experimental designs using ANOVA*. Thomson/Brooks/Cole.

Tol, W. A., Komproe, I. H., Jordans, M. J. D., Vallipuram, A., Sipsma, H., Sivayokan, S., Macy, R. D., & DE Jong, J. T. (2012). Outcomes and moderators of a preventive school-based mental health intervention for children affected by war in Sri Lanka: A cluster randomized trial. *World Psychiatry*, *11*(2), 114–122. https://doi.org/10.1016/j.wpsyc.2012.05.008

Tol, W. A., Komproe, I. H., Susanty, D., Jordans, M. J., Macy, R. D., & De Jong, J. T. (2008). School-based mental health intervention for children affected by political violence in Indonesia: A cluster randomized trial. *Journal of the American Medical Association*, *300*(6), 655–662. https://doi.org/10.1001/jama.300.6.655

Tolin, D. F., & Foa, E. B. (2002). Gender and PTSD: A cognitive model. In R. Kimerling, P. Ouimette, & J. Wolfe (Eds.), *Gender and PTSD* (pp. 76–97). The Guilford Press.

Tolin, D. F., & Foa, E. B. (2006). Sex differences in trauma and posttraumatic stress disorder: A quantitative review of 25 years of research. *Psychological Bulletin*, *132*(6), 959–992. https://doi.org/10.1037/0033-2909.132.6.959

Trickey, D., Siddaway, A. P., Meiser-Stedman, R., Serpell, L., & Field, A. P. (2012). A meta- analysis of risk factors for post-traumatic stress disorder in children and adolescents. *Clinical Psychology Review*, *32*(2), 122–138. https://doi.org/10.1016/j.cpr.2011.12.001

Received August 22, 2020
Revision received January 4, 2021
Accepted January 12, 2021 ■