The Child and Family Traumatic Stress Intervention: Secondary prevention for youth at risk of developing PTSD

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Objective: This pilot study evaluated the effectiveness of a four-session, caregiver–child Intervention, the Child and Family Traumatic Stress Intervention (CFTSI), to prevent the development of chronic posttraumatic stress disorder (PTSD) provided within 30 days of exposure to a potentially traumatic event (PTE). **Method:** One-hundred seventy-six 7 to 17-year-old youth were recruited through telephone screening based on report of one new distressing posttraumatic stress symptom after a PTE. Of those, 106 youth were randomly assigned to the Intervention ($n = 53$) or a four-session supportive Comparison condition ($N = 53$). Group differences in symptom severity were assessed using repeated measures with mixed effects models of intervention group, time, and the interaction of intervention and time. Logistic regression analyses were performed to assess treatment condition and any subsequent traumas experienced as predictors for full and partial PTSD diagnosis at 3-month follow-up. An exploratory chi-square analysis was performed to examine the differences in PTSD symptom criteria B, C, and D at follow-up. **Results:** At baseline, youth in both groups had similar demographics, past trauma exposures and symptom severity. At follow-up, the Intervention group demonstrated significantly fewer full and partial PTSD diagnoses than the Comparison group on a standardized diagnostic measure of PTSD. Also, there was a significant group by time interaction for Trauma Symptom Checklist for Children's Posttraumatic Stress and Anxiety Indices as the CFTSI group had significantly lower posttraumatic and anxiety scores than the Comparison group. **Conclusions:** The results suggest that a caregiver–youth, brief preventative early intervention for youth exposed to a PTE is a promising approach to preventing chronic PTSD. **Keywords:** Trauma, prevention, family. **Abbreviations:** CFTSI: Child and Family Traumatic Stress Intervention; F/U: 3-month follow-up; PTSD-RI: UCLA PTSD Reaction Index; TSCC: Trauma Symptom Checklist for Children.

Children and adolescents are subject to extremely high rates of maltreatment, victimization, intentional and unintentional injury, and exposure to other potentially traumatic events (PTE) (Centers for Disease Control and Prevention, 2009; Finkelhor, Ormrod, & Turner, 2009; McCaig & Nghi, 2002; McDonald, Jouriles, Ramisetty-Mikler, Caetano, & Green, 2006). A telephone survey of a nationally representative sample indicates that upwards of 60% of children and adolescents have experienced or witnessed at least one PTE in the previous year (Finkelhor et al., 2009). In the United States an estimated 15.5 million children are exposed to domestic violence each year. Another 7 million children were exposed to severe and chronic intrafamilial violence (McDonald et al., 2006) and an estimated 10 million children and adolescents under the age of 15 were seen in hospital emergency rooms due to injuries in 2000 (McCaig & Nghi, 2002). Although most studies estimate that only 6–20% of individuals will develop posttraumatic stress disorder (PTSD) after a PTE (Kahana, Feeny, Youngstrom, & Drotar,

2006), the sheer number of youth who encounter PTEs in a given year could lead to annual incidence of full or partial PTSD that reaches the millions. It is of additional concern that children affected by multiple factors of social adversity are at greater risk for PTSD (Cooley-Quille, Boyd, Frantz, & Walsh, 2001; Overstreet & Braun, 2000; Sharfstein, 2006). A study of elementary and middle school children in a poor urban community reported that 50% screened positive for the full diagnosis of PTSD and 21% for partial PTSD (Horowitz, McKay, & Marshall, 2005). Given the high rates of exposure, there is an urgent need for effective interventions that decrease the risk for posttraumatic disorders. We define secondary prevention as an intervention introduced when there are early distressing symptoms that indicate risk for subsequent psychiatric disorder.

At present there is one published randomized controlled study with baseline and outcome data of an early preventative intervention for youth. A modified version of Critical Incident Stress Debriefing was used for youth involved in motor vehicle accidents (MVA), which demonstrated no difference between the intervention and non-intervention groups for PTSD (Stallard et al., 2006). Also, there is one report in which the provision of psychoeducational information for parents did not improve child

outcomes when compared to a no-intervention group after exposure to a MVA (Kenardy, Thompson, Le Brocque, & Olsson, 2008). Many agree that the development of PTSD constitutes a 'failure of recovery' as the majority of individuals, both adults and youth, exposed to a PTE typically experience transient symptoms and subsequently return to their previous level of functioning (Foa & Meadows, 1997; Rothbaum & Davis, 2003). While multiple non-modifiable factors contribute to suboptimal recovery, it should be possible when providing early interventions to target and optimize protective factors such as social and family support and coping skills shortly after a PTE.

We report the promising findings of a four-session caregiver–child early intervention and secondary prevention model, the Child and Family Traumatic Stress Intervention (CFTSI), for children ages 7–17. We hypothesized that the CFTSI would be a more effective secondary prevention model compared to a four-session supportive intervention.

The CFTSI focuses on two key risk factors of poor social or familial support and poor coping skills in its effort to prevent chronic PTSD. The CFTSI ameliorates these risks by (1) increasing communication between the affected child and his caregivers about feelings, symptoms and behaviors with the goal of increasing the caregivers' support of the child and (2) providing specific behavioral skills that are taught both to the caregiver and child to assist in coping with symptoms (see description below, manual available on request).

CFTSI's focus is informed by findings that indicate the role of family support as a primary protective factor for children exposed to a PTE (Hill, Levermore, Twaite, & Jones, 1996; Kliewer et al., 2004; Ozer, Best, Lipsey, & Weiss, 2003). This protective factor has also been demonstrated in families where there has been intra-familial abuse, with a decrease in children's symptoms when the non-offending parent is able to provide support (Boney-McCoy & Finkelhor, 1995; Margolin, 1998; Trickett, 1997). An analysis of the current study's baseline data of child reports demonstrated that hostile/coercive parenting was a statistically significant predictor of initial child PTSD symptom severity, adding further evidence to the salience of caregiver–child relationships (Valentino, Berkowitz, & Stover, 2010).

Optimal support requires communication between caregivers and affected children (Kerr & Stattin, 2000; Kerr, Stattin, & Trost, 1999; Stattin & Kerr, 2000). CFTSI expedites and enhances communication by using well-established PTSD and mood questionnaires as vehicles for identifying and discussing the child's difficulties and focusing on understanding and reviewing agreement and discrepancies between reported and observed symptoms of PTSD and depression. Once symptoms are identified, CFTSI teaches caregivers and youth specific coping skills to manage them. The current study

specifically evaluates whether the CFTSI, a protocolized four-session caregiver–child early intervention, was more effective in preventing the development of chronic PTSD as compared to a comparison four-session intervention that provided supportive counseling and psychoeducation (see Table 1).

CFTSI description

Only the adult caregivers and the provider are present for the first session. At its opening, the clinician explains each step in the process and its rationale. A psychoeducational approach is applied with explanations of typical reactions to PTEs and the protective role of family support. Consistent with the focus on the essential role of caregivers, the Posttraumatic Checklist–Civilian version (Weathers, Litz, Huska, & Keane, 1994) is administered. This allows the clinician to integrate an understanding of the caregiver's psychological status throughout the intervention. External stressors related to the recent PTE are identified and a plan for managing them is developed. We have found that addressing event-related stressors both serves as an engagement tool and permits caregivers to more readily focus on the child's emotional needs. Lastly, the caregivers are administered parent versions of the Trauma History Questionnaire (THQ; Berkowitz & Stover, 2005), and modified versions of the UCLA Posttraumatic Reaction Index (PTSD-RI; Pynoos, Rodriguez, Steinberg, Stuber, & Frederick, 1998) and the Mood and Feelings Questionnaire (MFQ; Angold & Costello, 1987), which will be the central focus of the joint session to follow. Session one and all subsequent sessions average one to one and one half hours in length.

Session Two occurs as close to Session One as possible and the provider meets first with the child alone and then with caregivers and child. The second half of this session is the core component of the CFTSI and lays the groundwork for all subsequent aspects of the intervention. First, the child is administered the THQ, PTSD-RI and Short MFQ. The clinician, with the child and caregiver/s, facilitates a comparison of the responses as means of improving communication, which is the presumed prerequisite to enhancing caregiver emotional support. If there is an agreement about symptom severity the parent and child are praised. Discordance is seen as an opportunity to increase communication. The clinician takes a dual approach to improving communication, helping both the child to better inform the parent about symptoms, and the parent to be more aware, receptive, and supportive. Session Two ends with the clinician proposing two areas of concern based on symptom clusters which the child and caregivers have identified as most problematic. Together the clinician and family choose one to two behavioral skill modules as 'homework' before the next session. These modules cover 6 topic areas (1) sleep disturbance, (2) depressive withdrawal, (3) oppositionality/tantrums, (4)

Table 1 Comparison intervention

	Session 1	Session 2	Session 3	Session 4
Comparison intervention	**Caregiver Alone** • Explanation of process; intervention rationale; psychoeducation • PCL for caregiver • Review case management needs • HPI, developmental • History, family history, etc. • Administer questionnaires as clinical interviews: PTSD-RI, MFQ	**Child Alone** • Explanation of process; intervention rationale • Administration of PTSD-RI and MFQ • Provide psychoeducation about how child's symptoms are related to the PTE • Provide support, normalize symptomatic reactions • Teach relaxation techniques to address symptoms: diaphragmatic breathing, etc.	**Child Alone** • Review symptoms to assess changes • Review psychoeducation • Provide support, normalize symptoms and feelings • Practice relaxation techniques • Review coping strategies based on symptoms (e.g., guided imagery, thought stopping, distraction techniques)	**Caregiver and Child** • Administer PTSD-RI and MFQ • Feedback re: child's status • Discuss disposition

intrusive thoughts, (5) anxiety, avoidance and phobic reactions, and (6) a general overview of traumatic stress symptoms and techniques to manage them. Each module reviews psychoeducation and specific techniques, with separate instructions for the caregiver and child to discuss and practice. The maintenance of routines is emphasized throughout. Specific techniques involve both behavioral and cognitive procedures such as thought replacement methods for intrusive thoughts, breathing retraining for anxiety, behavioral activation for depression and avoidance. The specific elements for addressing each problem area have been borrowed and adapted from well-accepted methods from the traumatic stress treatment literature.

The caregivers, child, and clinician meet together for Session Three; demonstrating the solution to the child's difficulties is a family matter. The same symptom surveys are administered with the child responding first and the caregivers offering their perspective on the items. It permits symptom monitoring as well as an examination of which methods of communication and supportive efforts were most successful. Efforts center on adjustments to improve communication efforts and review the effectiveness of the skill modules and other supportive measures. While the skill modules were reviewed during Session Two, they are practiced in Sessions Three and Four.

Session Four essentially duplicates Session Three, with one key difference. The end of the session is used to discuss next steps. Depending on the status of the child, the clinician may suggest a future check-in, evaluation and treatment for an apparent preexisting psychiatric disorder or a more extensive treatment for PTSD.
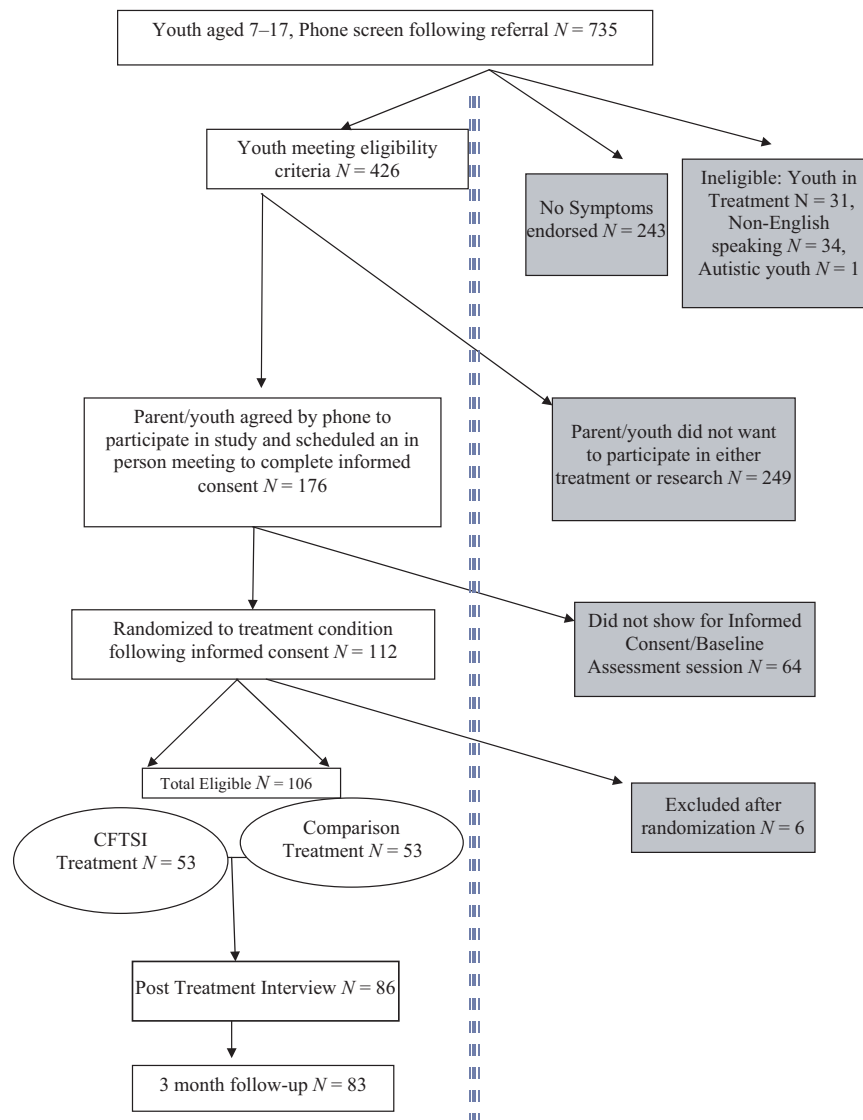
Methods

Participants

One hundred-twelve youth aged 7–17 years exposed to a potentially traumatic event who endorsed at least one

new and distressing symptom of PTSD on the Post-traumatic Checklist–Civilian (PCL; Weathers et al., 1994) within 30 days of the PTE were randomized into the pilot study at the Trauma Section of the Yale Child Study Center. Children were referred for service by police or a forensic sexual abuse program. Children were recruited from a pediatric emergency department (PED) following a record review, by follow-up phone call. The study recruitment occurred from 1 November 2006 to 1 May 2009 with follow-up interviews completed by 1 September 2009.

Procedure

The randomized pilot was conducted within the context of a clinical treatment and service development grant to design early intervention models for youth exposed to a PTE. All screened youth and families were offered services regardless of agreement to participate in the study.

Seven-hundred thirty-five families were contacted by phone and, if agreeable, screened using the PCL by trained research assistants (RAs). Youth who had one new symptom since the PTE as reported by either the youth or caregiver were further screened for eligibility ($N = 426$). Youth were excluded if: 1) they were receiving counseling or mental health treatment ($N = 31$); 2) they had a developmental delay (e.g., autism) or diagnosed psychotic or bipolar disorder ($N = 1$); 3) non-English-speaking caregiver or youth ($N = 34$); 4) or refused participation in the research study ($N = 249$). If they met inclusion criteria and agreed to participate, an initial appointment was scheduled to complete informed consent ($N = 176$). Sixty-four families scheduled an appointment to enroll but did not attend, yielding a total sample of 112 who signed informed consent and were randomized to the two conditions (see Figure 1). Six cases were excluded following randomization: three due to the caregiver or child's inability to complete research measures, two due to inability to follow the CFTSI protocol and one due to the child already receiving other mental health treatment. This resulted in a final sample of 106 participants. There were no differences in the age or gender of the child for those who agreed to participate and those who either refused or didn't attend. Eighty-two percent of potential cases

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Youth aged 7–17, Phone screen following referral N = 735
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Youth meeting eligibility
criteria N = 426
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No Symptoms
endorsed N = 243
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Ineligible: Youth in
Treatment N = 31,
Non-English
speaking N = 34,
Autistic youth N = 1
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Parent/youth agreed by phone to
participate in study and scheduled an in
person meeting to complete informed
consent N = 176
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Parent/youth did not want
to participate in either
treatment or research N = 249
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Randomized to treatment condition
following informed consent N = 112
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Did not show for Informed
Consent/Baseline
Assessment session N = 64
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Total Eligible N = 106
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CFTSI
Treatment N = 53
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Comparison
Treatment N = 53
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Excluded after
randomization N = 6
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Post Treatment Interview N = 86
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3 month follow-up N = 83
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Figure 1 Participant flow through each phase of study

came from the Pediatric Emergency Department (PED). Of those contacted and screened from the PED, 71% declined participation versus 26% of police and 21% of sexual abuse program referrals. The high rate of refusal from those recruited for the PED was expected, since families were contacted by phone without prior knowledge of the study or expressed desire for mental health follow-up.

Children and their families were randomized to the CFTSI or the comparison intervention condition immediately after consent by an RA, using a ten-subject block design using number containers, and received baseline measures and the first treatment session at the time of their initial visit. Baseline interviews and the first treatment session occurred within 30 days of a child's exposure to a PTE, and so youth could not meet criteria for a PTSD diagnosis at that time. Following written informed consent procedures, participants were interviewed using a set of standard measures. Separate interviews were conducted with each child and caregiver by trained RAs who were unblinded. Youth and caregivers in the intervention group received the four-session CFTSI protocol. Comparison youth received a protocolized psychoeducational (including relaxation training) and supportive

four-session intervention that included an initial meeting with the adult caregiver, two individual child sessions and a fourth feedback session with both (see Table 1). All participants were interviewed by RA at baseline, immediately following their fourth treatment session (4 weeks from baseline) and 3 months post-treatment by research assistants. The intervention was provided by master- and doctoral-level clinicians. They were divided into two groups and trained in each model. Each group rotated every 6 months. Fidelity to both groups was ensured through weekly group supervision with a developer of each condition who did not rotate. Progress notes were developed for each condition to help supervisors ensure fidelity.

Measures

The Trauma History Questionnaire (THQ) was administered at baseline and follow-up to establish the number of previous PTEs, as a history of exposure to traumatic events has been shown to be a risk factor for the development of PTSD and therefore a possible confounder if a group difference was found. This questionnaire contains 13 items developed at the Childhood Violent Trauma Center to quickly assess children's

histories of previous traumatic events and the intensity of their reactions. The THQ is a modification of the Traumatic Events Screening Inventory–Child Self-Report and the Parent-Report Revised (Ghosh-Ippen et al., 2002) which screens for a range of traumatic events and includes assessments of the impact of the event on the child both at the time of the incident and at present. A total trauma history score was achieved by totaling the number of unique trauma types endorsed by either caregiver or child report (each trauma type was counted once, whether reported by the child, caregiver or both.)

The Parent Behavior Inventory (PBI) was administered at baseline as parenting practice is a focus of the CFTSI and would moderate PTSD outcomes. The PBI is a brief 20-item measure of parenting behavior that contains two independent scales, Supportive/Engaged and Hostile/Coercive. These scales have sufficient content validity, adequate internal consistency (alpha = .81 and .83 respectively) and test–retest reliability (.69 and .74 respectively) (Lovejoy, Weis, O'Hare, & Rubin, 1999).

The Perceived Social Support–Family (PSS-Fa) was administered at baseline, since caregiver support of their child was the hypothesized mechanism of action of the CFTSI and between-group differences would confound outcomes. The PSS-Fa is a 20-item measure that was used to assess the child's perceived emotional support from their family. The measure demonstrated good internal consistency (alpha = .90) and the test–retest coefficient = .83 (Procidano & Heller, 1983). Furthermore, Windle and Tutzauer (Windle & Miller-Tutzauer, 1992) tested a four-point Likert scale resulting in a three-factor structure within the PSS. Cronbach alphas for the scales were .93, .87, and .62. Test–retest coefficients were .77, .71, and .55.

The UCLA Posttraumatic Stress Disorder Index (PTSD-RI; Pynoos et al., 1998) was administered at baseline by the clinician in each condition and at the 3-month follow-up by an RA. The PTSD-RI is an extensively used instrument that was used to assess posttraumatic symptomatology related to subjective distress, as well as PTSD diagnostic criteria B (re-experiencing), C (arousal) and D (avoidance) symptoms and can be used to diagnose full or partial PTSD based on DSM-IV criteria (Steinberg, Brymer, Decker, & Pynoos, 2004).

The Behavior Assessment System for Children, Second Edition–Self Report (BASC-2) was administered at baseline only to assess for symptoms and functioning prior to the current PTE as a potential confounder if there were differences between groups. The BASC-2 is a 139-item measure of the child's reported symptoms and behaviors in a wide variety of domains (e.g., hyperactivity, aggression, depression, adaptability, etc.) (Reynolds & Kamphaus, 2004). It generates T-scores for several scales including Internalizing and Emotional Problems, and has been standardized for children aged 7–18.

The Child Behavior Checklist (CBCL) was administered to caregivers at baseline to assess for preexisting symptoms and behaviors as a potential confounder if there were differences between groups. The CBCL is a factor analytic derived checklist of child behavior that is administered to parents or guardians (Achenbach & Rescorla, 2001). The CBCL yields age- and gender-normed T-scores for children's internalizing, externalizing, and total behavior problems.

The PTSD Checklist–Civilian Version (PCL-C) was used as the screening tool asked of both a primary caregiver and child. It was also administered to the participant caregiver at baseline. The PCL-C is a 17-item self-report questionnaire designed to assess the 17 PTSD symptoms described in the DSM-IV (Weathers et al., 1994). The total score on the PCL-C was our index of PTSD symptomatology in caregivers. It has been cross-validated with the Clinician Administered PTSD Scale (Blake et al., 1995) and is considered to be a valid and reliable screening measure for PTSD (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996).

The Trauma Symptom Checklist for Children (TSCC) was administered at all time points to evaluate post-traumatic symptomatology (Briere, 1996). The scale does not provide a diagnosis, but measures PTSD symptoms, as well as other symptoms found in some traumatized children. Specifically, this 54-item self-report measure consists of two validity scales and six clinical scales. For this study, the Anxiety, Post-traumatic Stress, and Dissociation indices were analyzed as these indices are associated with the PTSD diagnosis.

Data analysis

Prior to hypothesis testing, chi-squares and analysis of variance (ANOVA) were run to determine if there were significant group differences at baseline. The potential confounders assessed were ethnicity, age of victim, total trauma history, parental posttraumatic symptoms (PCL), family social support (PSS-Fa), parent behavior (PBI), and child adaptive and emotional functioning (BASC/CBCL). Parent behavior toward their child and family support were important baseline considerations given the focus of the CFTSI on increasing familial support and improving parents' responsiveness to their children following a trauma. If significant group differences existed, these variables would be entered into subsequent multivariate analysis models. To assess potential bias of analysis due to missing data, chi-square and ANOVAs were conducted to compare cases with or without missing data on covariates and baseline measures of the dependent variables as suggested by Hedeker and Gibbons (1997) and Graham (2009).

There were two related outcomes of interest: differences in TSCC symptom severity on the PTS, Anxiety and Dissociation indices, and PTSD diagnosis and severity of symptoms at the 3-month follow-up (F/U). For diagnosis, logistic regression analyses were performed to assess treatment condition and any subsequent traumas experienced as predictors for full and partial (meeting two of three criteria) PTSD diagnosis at F/U. For symptom severity, repeated measures with mixed effects models were conducted. Group (CFTSI versus Comparison), time (Baseline, post-treatment, or 3-month follow-ups), and the interaction of treatment and time (Group × Time) were the primary independent variables of interest. The Group × Time interaction effect, if significant, represents significant differences in change within the groups on symptoms. The Holm–Bonferroni method was used to correct for multiple comparisons (Holm, 1979). To further disentangle the impact of the intervention on PTSD diagnosis we performed exploratory chi-square analysis to examine the differences in PTSD symptom criteria B, C, and D at F/U.

Results

Demographics

Data from one hundred six subjects were available for analysis (53 Comparison and 53 CFTSI). Fifteen families attended the baseline session only and did not return for treatment sessions or additional research interviews, 5 did not attend the final session and post interview and 3 did not participate in F/U. There was no significant difference between the CFTSI and comparison conditions in the number of dropouts, nor were there significant differences between groups in number of treatment sessions attended (F(1,105)1.12, p = .29) or the number of days between the PTE and beginning the intervention (F(1,105) = 1.82, p = .18). The mean number of days from session 1 to session 4 was 28.9; SD = 12.87. There was no differences between groups for age, ethnicity or PTE type. The mean age of youth in the sample was 12, with 48% males, 32% Caucasian, 37% African American, 22% Hispanic, 7% Multiethnic, 2% other ethnicities. The nature of the PTEs that brought participants to the study were: 24% motor vehicle accident (MVA), 18% sexual abuse, 19% witnessing violence, 21% physical assaults, 8% injuries (e.g., sports, cycling), 5% animal bite, and 5% threats of violence (e.g., mugging). The majority of caregivers were females (90%), with only 10% fathers or stepfathers participating. Only non-offending caregivers were permitted to participate.

Additionally, there were no significant differences between groups on number of previous trauma types experienced, parenting behavior, social support, baseline symptom scores on the PCL, PTSD-RI Severity, BASC-II, CBCL or TSCC indices. There were no differences in the number of new traumas experienced (F(1, 81) = .082, p = .78) between baseline and F/U, with means 1.85 for Comparison and 1.80 for CFTSI.

Cases were coded as either complete or missing data. There were no significant differences between cases with complete or missing data on any of the covariates (e.g., trauma history, parent behavior, social support, BASC or CBCL scores) or baseline measures of the dependent variables (TSCC anxiety, dissociation, and PTS or PTSD partial or full diagnosis). Given the lack of differences and the ability of mixed effects modeling to handle missing data and its comparability to multiple imputations (Raudenbush & Bryk, 2002), mixed effects models were conducted with the full sample of 106 participants. Imputation was not used in this study since baseline interviews took place within 30 days of a PTE and PTSD symptoms often remit on their own, making it difficult to impute data appropriately. In addition, there are cautions in the literature regarding use of imputation methods for dichotomous outcomes and missing covariates (Schafer & Graham, 2002; Allison, 2000).

Group differences in TSCC symptom severity post-treatment and at follow-up

There was a significant group by time interaction for TSCC Posttraumatic Stress (F(2,163) = 3.25, p = .04) and Anxiety (F(2,163) = 4.89, p = .009) Indices. Youth in the CFTSI group had significantly lower posttraumatic and anxiety scores than comparison youth (see Table 2).

Group differences in PTSD diagnostic criteria at follow-up

Logistic regression was performed to examine group differences in PTSD diagnosis at F/U based on child self-reports on the PTSD-RI. Intervention group and total number of trauma types experienced since the baseline interview were simultaneously entered into the models for full PTSD and then for full or partial PTSD. At F/U the overall model was significant ($X2$(2, 81) = 6.25, p = .04) and accounted for 10.8% of the variance (Nagelkerke $R2$ = .108). After intervention, the CFTSI group was significantly less likely to have PTSD at F/U (B = −1.063, p = .046), reducing the odds of PTSD by 65% (see Table 3). The overall model assessing full or partial PTSD diagnosis at 3-month follow-up was significant ($X2$(2, 81) = 12.65, p = .002) and accounted for 18.9% of the variance (Nagelkerke $R2$ = .189). CFTSI reduced the odds of partial or full PTSD by 73% (B = −1.32, p = .008) (see Table 3). Additionally, there were significant differences between groups at 3-month follow-up in severity of PTSD symptoms on the PTSD-RI (F(2, 81 = 6.55, p = .01), with means for CFTSI and Comparison 8.70 and 14.74 at F/U respectively.

Exploratory analysis

Chi-square analyses were used to determine which PTSD criteria resulted in significant differences between CFTSI and Comparison groups in PTSD diagnosis. At F/U, there were significant group differences in Re-experiencing with 85% of comparison and 57% of CFTSI ($X2$ (1, 83) = 8.04, p = .005) and Avoidance with 37% comparison and 17% CFTSI ($X2$(1, 83) = 4.23, p = .04) meeting criteria. There were no differences in Hyperarousal ($X2$(1, 83) = 2.57, p = .11) (See Figure 2).

Discussion

Results of this randomized pilot study indicate that the CFTSI has promise as an early intervention designed to prevent the development of chronic PTSD and associated symptoms. Children that received the CFTSI were 65% less likely to meet criteria for PTSD at the 3-month follow-up than children who received the comparison condition as measured by the PTSD-RI. In addition, when PTSD and

Table 2 Repeated measures models to compare groups on TSCC indices (*N* = 106)

Outcome measure	LS Mean (SE) Baseline	LS Mean (SE) Post	LS Mean (SE) 3 mos	df	*F*(Group × Time)	*p*
PTS				163	3.25*	.04
CFTSI	53. 30(1.34)	42.97(1.37)+	39.74(1.38)			
Comparison	51.74(1.29)	46.12 (1.33)	42.22(1.37)			
Dissociation				163	1.28	.28
CFTSI	47.64(1.12)	42.26(1.12)+	41.02(1.13.)			
Comparison	48.23(1.07)	45.12(1.09)	43.54(1.12)			
Anxiety				163	4.89**	.009
CFTSI	51.34(1.33)	40.86(1.36)*	39.64(1.37)			
Comparison	50.45(1.29)	45.49(1.31)	41.82(1.35)			

Note: +*p* < .10, *p < .05, **p < .01.
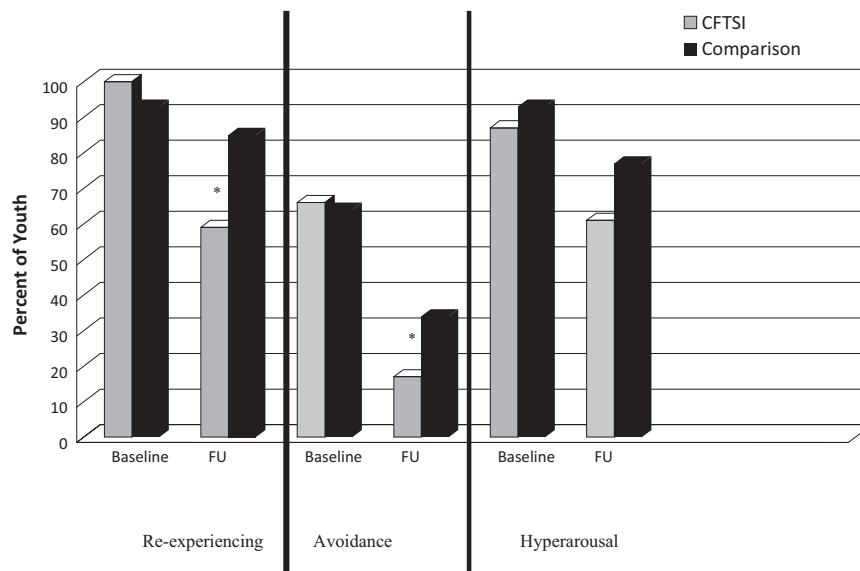
Figure 2 Percent youth meeting re-experiencing, avoidance, and hyperarousal by condition. Note: FU = 3-month follow-up

Table 3 Logistic regression models for PTSD full diagnosis and full or partial diagnosis at 3-month follow-up (*N* = 82)

	3-month follow-up	
Effect	B (SE)	Odds ratio
Full diagnosis		
Total traumas	192(.142)	1.21
Intervention	−1.06(.534)	.345*
Full or partial diagnosis		
Total traumas	373(.178)	1.45*
Intervention	−1.36(.499)	.268**

*p < .05; **p <.01.

sub-clinical PTSD were combined, the CFTSI continued to demonstrate a statistically significant decrease by 73% at F/U. Importantly, on the TSCC posttraumatic and anxiety indices, symptoms were significantly lower in the CFTSI group post-treatment and remained lower at follow-up, possibly indicating CFTSI reduces symptoms and promotes recovery more quickly than the comparison condition.

CFTSI participants showed a significant decrease in the Avoidance and Re-experiencing criteria, while the Hyperarousal criteria did not show a significant difference. Since CFTSI's core therapeutic method is focused on increasing caregiver–child communication, a decrease in Avoidance symptomatology was an anticipated outcome. Caregiver attunement to their children's symptoms is more likely to lead to their raising concerns about the child's status and the recent PTE. While it is not clear which element of the CFTSI positively impacted the Re-experiencing criteria, it is likely related to the decrease in Avoidance. The lack of significant change in the Hyperarousal criteria needs further exploration. But given that the majority of study participants lived in highly stressed impoverished urban environments, Hyperarousal may be a necessary and unmodifiable adaptation.

Limitations

This was a pilot study with several notable limitations. Attrition from phone screen to study consent was high, with 64 of 176 families failing to attend their first appointment. An additional 15 dropped out

after the baseline research and clinical meeting and 8 more did not complete the F/U. Although we are unable to report on the reasons for the attrition, high attrition rates are common in urban child mental health treatment. Of the youth who are referred to child public sector clinics, 50 to 75% do not initiate treatment or drop out prematurely (Kazdin, Holland, & Crowley, 1997). With regards to the 64 families who did not attend a first appointment, some youth's symptoms may have resolved and the others may have succumbed to Avoidance and refused to attend. Fourteen percent dropped out after their baseline interview for unclear reasons, but were included in the analysis, as were the 8 who dropped out during the intervention study. It may be that a shorter research interview prior to commencement of intervention would have resulted in fewer dropouts. A larger, more rigorous study will require greater outreach efforts and higher reimbursement rate for participation in the research interview.

The current study did not evaluate which elements of the CFTSI acted as the essential therapeutic mechanisms. It remains unclear whether the hypothesized mechanism, caregiver support of the child, is the central active ingredient of the CFTSI. One may argue that the process of discussing symptoms acted to promote imaginal exposure, which, therefore, was the primary reason for improvement. Also the frequency of use or the effectiveness of the Behavioral Skill Modules was not evaluated, nor was the presumption that attention to recent PTE-related case management issues would alleviate external stresses and permit greater focus on psychological concerns. Further studies that disaggregate the various elements of the CFTSI and evaluate their hypothesized effect will be necessary to refine the model and clarify which ingredients should be maintained.

Study participants experienced a wide variety of trauma types. Whether the CFTSI is more effective with specific trauma types is beyond the scope of the current evaluation but should be studied in future trials. In addition, the inclusion criteria set a low threshold of one new distressing symptom since the PTE, yet at baseline screening, most were symptomatic as measured by the PTSD-RI. Baseline severity scores on the PTSD-RI were 23.5 for the CFTSI group and 25 for the Comparison. Since participants were drawn from an urban community confronted by multiple factors of social adversity associated with poverty, a low threshold for inclusion seems warranted. The finding that the mean number of different previous PTEs in the sample was 6 seems to justify the low threshold for inclusion. However, the number of prior PTEs experienced by the youth in the study leads to the question of whether the CFTSI was preventing or treating established PTSD. A future study with symptomatic children after a single incident with minimal trauma histories would assist in answering this question.

One methodological issue in the study is the use of the PTSD-RI as both part of the interventions and an outcome measure. Since the PTSD-RI was administered by an RA 3 months after the last session, it is unlikely a practice effect invalidated the outcomes. However, future and methodologically more rigorous studies require the use of a different outcome measure to assess diagnosis.

Conclusion

The inability to recover after exposure to a PTE is a multi-factorial interaction among event, individual and posttraumatic factors. Clearly, the prevention of traumatic exposure is likely to be the most effective measure to prevent post traumatic psychopathology. Unfortunately, while universal primary prevention strategies may decrease children's rates of exposure, it would be impossible to prevent all PTEs and subsequent full or partial PTSD. Effective early and brief intervention strategies that prevent the development of PTSD are a necessary and cost-effective addition to behavioral health services. In addition to the problem of access to early intervention, there is a need for better identification of children who are in distress following a PTE. Caregivers are notoriously poor at recognizing acute PTSS in their children (Kassam-Adams, Garcia-Espana, Miller, & Winston, 2006; Shemesh et al., 2005). It is incumbent upon child-serving systems such as pediatric emergency departments and child welfare agencies to facilitate the identification of exposed children in need of early intervention. Early interventions grounded in the protective factors that support resilience and recovery should be able to prevent PTSD symptoms and the development of disorders. The current results suggest that CFTSI offers promise effective for just such an evidenced-based early intervention.

Acknowledgements

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Key points

- Youth at high risk for developing PTSD should receive early preventative interventions.
- Secondary prevention interventions for PTSD in youth that focus on improving protective factors have promise as an effective strategy.
- Emotional support by an adult caregiver is a primary protective factor, which appears to be modifiable after exposure to an PTE.
- Improving coping skills after a PTE may reduce the development of PTSD.
- Collaboration with organizations that have contact with youth after a PTE is essential for the provision of secondary prevention interventions.

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