The Association between Treatment Components and Mental Health Outcomes Among Young Children Exposed to Violence

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ABSTRACT

Background   When treating violence-exposed children, clinicians often modify psychotherapy protocols or use only a subset of treatment components (e.g., a clinical technique, strategy). However, there is little evidence of the effectiveness of individual treatment components. Our study aimed to determine: i) the best fitting factor structure of individual treatment components; ii) the association of child characteristics (i.e., demographics, treatment dosage, environmental risk factors) with mental health outcomes (i.e., post-treatment internalizing and externalizing symptoms); and iii) the association of individual treatment factors (i.e., sets of treatment components) with mental health outcomes.

Methods   A sample of 459 violence-exposed children aged 1.5–5 years was examined. Principal component analyses were conducted to factor-analyze 22 child treatment components and 18 caregiver treatment components, respectively. Multiple linear regression analyses were conducted to determine the relationship between child and caregiver treatment factors and outcomes.

Results   Children who received *grief work* showed significant improvement in externalizing symptoms. Children of caregivers who received parent training, attachment skills building, psychoeducation about domestic violence, safety planning, and anger management training showed significantly less externalizing symptom improvement. Gender, race/ethnicity, and treatment dosage were also associated with outcomes.

Conclusion   This is the first study to examine treatment components in a sample of young children exposed to violence with a standardized quantitative measure. Our findings suggest that acknowledging children's loss and sorrow expressed through externalizing behavior and helping them process bereavement may help alleviate their symptoms. Clinical recommendations are discussed.

Key words   child maltreatment; externalizing symptoms; internalizing symptoms; practice element; trauma

Violence exposure is prevalent among children around the world. Violence against children encompasses physical/sexual abuse, neglect, witnessing domestic, witnessing community violence, and human trafficking.[1] Young children (toddlers and preschoolers) are especially vulnerable to the detrimental effects of exposure to violence.[2] Violence exposure can cause architectural changes in young children's developing brains that are linked to impaired cognitive abilities and mental health functioning, including internalizing (e.g., anxiety) and externalizing (e.g., aggression) symptoms.[3–5]

Psychotherapy is often used to treat children exposed to violence. The level of scientific support for individual psychotherapy models varies. Evidence-based treatments (EBTs) for childhood trauma, including Trauma-Focused Cognitive Behavioral Therapy (TF-CBT) and Child-Parent Psychotherapy (CPP), are most effective at alleviating the effects of violence exposure on children.[6–8] Non-EBTs for childhood trauma, including Attention, Regulation, and Competency (ARC), are frequently used to treat children exposed to violence in community-based settings.[9]

Psychotherapy models for childhood trauma typically have protocols (i.e., formal procedures or guidelines utilized in the psychotherapy model). Psychotherapy protocols typically consist of treatment components (or "practice elements"). These treatment components are defined as a clinical technique, strategy, or content, including relaxation, parent training, and psychoeducation.[10] Treatment components significantly overlap across different treatment protocols. For example, relaxation skills training is incorporated into TF-CBT and ARC, whereas improving caregiver-child attachment is incorporated into CPP and ARC.

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Research that has investigated the use of particular treatment components for improved mental health outcomes, especially for young children exposed to violence, is scarce. Schewe (2008)[11] and Schewe et al. (2013)[12] showed that emotion regulation, improving caregiver-child communication, symptom reduction (e.g., building bedtime routines to address insomnia), psychoeducation, safety planning, and grief work were associated with improved outcomes of violence-exposed children. Of note, child outcomes measured in their studies did not specify which symptoms had improved. Additionally, child outcomes in their studies were measured by *unstandardized clinician ratings*, which could reflect clinician bias. Deblinger et al. (2011) examined the association between the use of the *trauma narrative* component of TF-CBT and the outcomes of sexually abused children aged 4–19.[13] Surprisingly, their findings indicate that trauma narrative may be unnecessary to achieve better outcomes. This implies that all treatment components may not always be equally effective even if these components are included in EBTs. Thus, it is critical to examine the effects of individual treatment components. Notably, their study focused on trauma narrative and did not examine the effects of other treatment components of TF-CBT.

Overall, no research has investigated the relative effects of *a wide range of treatment components* that can reduce or exacerbate *specific symptoms* of young children exposed to violence using *a standardized measure* of child functioning rated by caregivers. Additionally, no research has examined how much treatment components *combined* (i.e., treatment factors) are associated with improved outcomes of young children exposed to violence. Therefore, this study aimed to determine: i) the best fitting factor structure of individual treatment components; ii) the association of child characteristics (i.e., demographics, treatment dosage, environmental risk factors) with outcomes (i.e., internalizing and externalizing symptoms of violence-exposed young children); and iii) the association of individual treatment factors (i.e., sets of treatment components) with outcomes.

MATERIALS AND METHODS
Participants
Data were collected from 12 community-based sites that provided treatment to children exposed to violence and their families from 2001 to 2015 through the Safe from the Start (SFS) program, which will be described in more detail below. The data included 2,516 children aged 1.5–5 years who received treatment from those sites. This study extracted the sample from the SFS data based on the following inclusion criteria: i) children whose caregivers completed the Child Behavior Checklist for Ages 1.5–5 (CBCL 1.5–5)[14] at least twice (reducing the sample from 2,694 to 996); ii) children and/or caregivers received psychotherapy between the first and the last CBCL 1.5–5 administration (reducing the sample from 996 to 759); and iii) the youngest child among children in the same family or with the same caregiver who had complete data (leading to the final sample of 459). Given the young age of children, a majority of children in the SFS program received family psychotherapy (i.e., both the caregiver and child participated in psychotherapy).

Measures
Demographics
Background Information Form[15] was developed for the SFS program to collect information regarding each child's background. Clinicians completed this form during an intake interview with the child's caregiver. Information captured included demographics, the type of violence to which the child was exposed, and whether the child had been exposed to any of 23 environmental risk factors at any point during the child's life (e.g., homelessness, single parent status, birth complications, unplanned pregnancy, mother's substance abuse during pregnancy, mental illness of any member of the child's home).

Treatment information
Child Completion of Services Form[15] was developed for the SFS program to collect information about treatment provided to children. Treatment information included the number of sessions each child attended, treatment format (e.g., individual, family, group), psychotherapy model used (e.g., CBT, ARC, CPP), and treatment components used (e.g., identifying/expressing feelings, anger management skills). Treatment components were derived from EBTs and usual care for young children exposed to violence. Clinicians rated the degree to which each treatment component was used in treatment as 0 = not used, 1 = briefly used, 2 = used, and 3 = primary focus.

Caregiver Completion of Services Form[15] was developed for the SFS program to collect information about treatment provided to caregivers. Treatment information included the number of sessions caregivers attended and treatment components used for caregivers (e.g., parent-child communication skills, substance abuse education). Treatment components were derived from EBTs and usual care for parents of young children exposed to violence. Clinicians rated the degree to

which each treatment component was used in treatment as 0 = not used, 1 = briefly used, 2 = used, and 3 = primary focus.

Child internalizing and externalizing symptoms
Child Behavior Checklist for Ages 1.5–5 (CBCL 1.5–5)[14] assessed mental health outcomes, including child internalizing and externalizing symptoms. The CBCL 1.5–5 is a 100-item caregiver-report measure designed to assess emotional and behavioral problems in young children aged 1.5–5 years. Response options are on a 3-point scale as 0 = not true, 1 = somewhat or sometimes true, and 2 = very true or often true. The CBCL consists of 7 syndrome scales and these syndrome scales produce Internalizing, Externalizing, and Total Problem Scale scores. The Internalizing Scale consists of Emotionally Reactive, Anxious/Depressed, Withdrawn, and Somatic Complaints Scales; the Externalizing Scale consists of Attention Problems and Aggressive Behavior Scales; Sleep Problem Scale belongs to neither of Internalizing nor Externalizing Scale; and the Total Problem Scale consists of all the problem items. The CBCL 1.5–5 has been demonstrated to be valid and reliable.[14] In the SFS program, CBCL 1.5–5 was completed every 5–6 sessions to monitor improvement or deterioration in child symptoms. For this study, *t*-scores of Internalizing, Externalizing, and Total Problem Scales were derived at intake (pre-treatment) and after treatment was terminated (post-treatment).

Procedure
The SFS program was initiated by the Illinois Violence Prevention Authority in 2001 to improve outcomes of children affected by violence. This program implemented and evaluated services at community-based mental health sites located across urban and suburban areas in Illinois, USA. Children (and their families) were referred to the SFS sites through different sources, including school teachers, medical providers, mental health providers, advocates for violence victims, child protective services, and self-referral. At the SFS sites, children with experience of violence exposure (and families) were recruited at the entry of services. When needed, caregivers and siblings (under age 18) also received services at the SFS sites. People who were recruited but declined participation in the SFS program were still eligible for the same services offered at the SFS sites. Services were provided at no cost to families because of the funding that the SFS program received.

The Illinois Violence Prevention Authority provided clinicians with mandatory training in an array of interventions related to childhood violence exposure. In service delivery, however, treatment formats, models, and components were chosen at the clinicians' discretion and were not dictated by SFS. This study was approved by the Northwestern University Internal Review Board (IRB ID: STU00206327).

Data analysis
Given that a significant number of participants were excluded from the original data for analyses, we conducted independent *t*-test to compare pre-treatment internalizing and externalizing symptom scores between the original and analytic samples. A principal component analysis (PCA) was conducted to factor-analyze 22 child treatment components and 18 caregiver treatment components, respectively. PCA factor loadings were subjected to a Varimax rotation to approximate a simple structure (i.e., each item loads primarily onto one factor). Scale scores (item sums) for each resulting factor were constructed based on rotated solutions, and then descriptive statistics, scale inter-correlations, and internal consistency (Cronbach's alpha) were estimated. These factors were used for subsequent analyses. Multiple linear regressions examined the relationships of each child treatment factor, each caregiver treatment factor, and each child characteristic (i.e., age, gender, race/ethnicity, the number of sessions attended by the child, the number of sessions attended by the caregiver, the number of environmental risk factors) with internalizing and externalizing symptom scores, respectively, controlling for pre-treatment symptom scores (baseline).

RESULTS
Table 1 summarizes the characteristics of the final sample for this study, consisting of 459 children aged from 1.5 to 5 years old, with an average age at study intake of 3.38 years (SD = 0.90). Of the sample, 54.68% were males, and 50.33% were White/Caucasians.

Independent *t*-test
An independent *t*-test compared pre-treatment internalizing score between the original and analytic samples and represented a small effect size ($d = 0.15$). An independent *t*-test compared pre-treatment externalizing score between the original and analytic samples and represented a small effect size ($d = 0.14$).

Best fitting structure: child treatment factors
Twenty-two child treatment component variables were factor-analyzed using PCA with Varimax rotation. Solutions for two, three, four, five, six, and seven factors were each examined using Varimax rotations of the factor loading matrix. The five-factor solution was

Table 1. Child Characteristics of Sample (*n* = 459)

Characteristics	*n* (%)	Mean (SD)	Range
Age in years (at intake interview)		3.38 (0.90)	1.54–4.99
Gender			
Male	251 (54.68%)		
Female	208 (45.32%)		
Race/ethnicity			
White/Caucasian	231 (50.33%)		
Black/African American	81 (17.65%)		
Hispanic/Latinx	70 (15.25%)		
Multiracial	60 (13.07%)		
Other	17 (3.70%)		
Number of environmental risk factors		7.86 (3.71)	0–19
Number of treatment sessions for child		17.32 (16.96)	0–136
Number of treatment sessions for caregiver		21.16 (18.76)	0–165
Pre-treatment internalizing symptom score		57.04 (11.52)	29–85
Post-treatment internalizing symptom score		49.98 (12.04)	29–82
Pre-treatment externalizing symptom score		58.41 (13.04)	28–95
Post-treatment externalizing symptom score		51.19 (13.30)	28–97
Length between pre- and post- treatment CBCL administrations (days)		272.8 (211.60)	35–1477

employed for treatment components for child, which accounted for 60.25% of item variance and was preferred because of interpretability and variance reduction. Child treatment components were assigned to treatment factors if they loaded at 0.40 or higher.[16] If a child treatment component loaded at 0.40 or higher for more than one factor, that component was initially assigned to the treatment factor for which it had the highest factor loading.

Reliability was assessed for each of the 5 child factors to determine child treatment factors that would be used for this study. For child factors 1, 3, 4, and 5, internal consistency improved when including all variables in the factor, as compared to without including any specific variable among these variables. For child factor 2, identifying/expressing feelings loaded relatively low and was not unique to this factor, with its inclusion lowering the factor's reliability and affecting its interpretability. This variable also showed little variability; 92.39% of children received treatment that addressed identifying/expressing feelings. Therefore, the "identifying/expressing feelings" component was removed from child factor 2. Cronbach's alpha of the other four variables was 0.84 and the mean of these four treatment components was 0.40 (SD = 0.37); the reliability improved when including all four variables. Therefore, these variables were chosen for child factor 2. We labelled individual

child treatment factors based on treatment components included in a particular factor and listed the final child treatment factors and treatment components in Table 2.

Best fitting structure: caregiver treatment factors
The seven-factor solution for treatment components was initially employed for caregiver, which accounted for 73.17% of item variance and was initially preferred because of interpretability and variance reduction. As described below, however, one factor was removed after reliability assessment, resulting in a six-factor solution, explaining 68.76% of item variance.

Reliability was assessed for each caregiver factor. For caregiver factors 1, 2, 3, and 6, internal consistency improved when including all variables in the factor, as compared to without including any specific variable among these variables. For caregiver factors 4 and 5, grief work loaded relatively low and was not unique to this factor, with inclusion lowering reliability and affecting interpretability. Therefore, grief work was removed from these factors. For caregiver factor 7, only one variable (effect of violence exposure on children) loaded to this factor and showed little variability; 96.30% of caregivers received violence exposure psychoeducation. Therefore, caregiver factor 7 was removed from the analyses. We labelled individual caregiver treatment factors based on treatment components included in a

Table 2. Child treatment factors and components

Child treatment component	Cronbach's alpha	Treatment factor				
		1	2	3	4	5
1. Skills and symptom management	0.89					
Problem solving skills		0.73	0.27	0.26	0.04	0.07
Relaxation skills		0.72	0.20	−0.03	0.22	0.07
Conflict resolution skills		0.69	0.19	0.45	−0.02	0.00
Social skills		0.69	0.01	0.27	−0.02	0.08
Decision making skills		0.67	0.07	0.36	0.04	0.06
Symptom reduction		0.66	0.20	−0.13	0.10	0.06
Anger management skills		0.64	0.29	0.18	−0.01	0.10
Parent-child communication skills		0.60	−0.10	−0.03	0.08	0.17
Self-concept/self-esteem		0.59	0.06	0.18	0.09	0.23
Identifying/ using social support		0.43	0.16	0.35	0.18	0.29
2. Domestic violence treatment and safety planning	0.84					
Responsibility of caregivers for violence exposure		0.10	0.82	0.05	0.09	0.23
Attitudes towards violence		0.10	0.80	0.15	0.00	0.14
Domestic violence		0.19	0.79	0.18	−0.01	0.22
Safety planning		0.12	0.67	0.17	0.25	−0.12
3. Community violence management	0.73					
Community violence		0.10	0.13	0.76	0.09	0.06
Media violence		0.19	0.08	0.73	0.09	0.02
Bullying		0.35	0.26	0.40	0.13	0.09
4. Sexual abuse treatment	0.73					
Sexual abuse		0.12	0.04	0.15	0.86	0.00
Good touch/bad touch		0.09	0.22	0.12	0.81	0.21
5. Grief work	0.62					
Dealing with separation		0.32	0.05	0.08	0.09	0.77
Grief and loss		0.11	0.27	0.05	0.06	0.77

particular factor and listed the final caregiver treatment factors and treatment components in Table 3.

Association of individual child characteristics with outcomes
Tables 4 shows the association of each child characteristic with outcomes.

Age
No significant results were found.

Gender
Relative to the full sample, males showed less improvement in post-treatment *internalizing* symptom score ($sr^2 = 0.008$, $t(459) = 2.25$, $P = 0.025$) and in post-treatment *externalizing* symptom score ($sr^2 = 0.006$, $t(459) = 2.11$, $P = 0.035$).

Race/Ethnicity
Relative to the full sample, Black children showed less improvement in post-treatment *externalizing* symptom score ($\Delta MR^2 = 0.007$, $t(459) = 2.25$, $P = 0.025$).

Treatment dosage
The higher number of treatment sessions attended by children was associated with less improvement in the post-treatment *internalizing* symptom score ($sr^2 = 0.016$, $t(459) = 1.52$, $P = 0.001$). The number of treatment sessions attended by children was also associated with less improvement in the post-treatment *externalizing* symptom score ($sr^2 = 0.019$, $t(459) = 3.71$, $P < 0.001$).

The higher number of treatment sessions attended by caregivers was associated with less improvement in the post-treatment *internalizing* symptom score ($sr^2 = 0.013$, $t(459) = 1.37$, $P = 0.003$). The number of treatment

Table 3. Caregiver treatment factors and components

Caregiver treatment component	Cronbach's alpha	Treatment factor					
		1	2	3	4	5	6
1. Parenting training and attachment skills building	0.79						
Parent-child communication skills		0.80	0.07	−0.02	0.14	0.13	0.12
Parent-child attachment		0.75	0.03	0.18	0.08	0.22	0.02
Non-violent discipline		0.73	0.20	0.20	0.19	−0.13	−0.11
Child development		0.68	−0.09	0.15	0.13	0.23	0.04
2. Domestic violence psychoeducation and safety planning	0.88						
Cycle of violence		0.09	0.88	0.11	0.16	0.10	−0.04
Domestic violence		0.06	0.86	0.12	0.11	0.17	−0.08
Safety planning		0.01	0.79	0.14	0.00	0.22	0.21
3. Community violence management and substance abuse education	0.72						
Gang involvement		0.04	0.10	0.78	0.06	0.14	0.12
Community violence		0.09	0.06	0.75	0.19	0.19	0.01
Media violence		0.27	0.03	0.71	0.07	0.07	0.06
Substance abuse education		0.11	0.29	0.62	0.17	−0.16	0.08
4. Anger management training	0.83						
Anger management skills		0.35	0.21	0.14	0.78	−0.04	0.05
Conflict resolution skills		0.33	0.25	0.20	0.75	0.13	0.08
5. Social support building	0.76						
How to access local resources		0.20	0.25	0.16	0.06	0.77	−0.02
Building a support system		0.26	0.34	0.06	0.12	0.74	0.05
6. Sexual abuse treatment	N/A						
Sexual abuse		0.06	0.05	0.19	0.11	0.02	0.95

sessions attended by caregivers was associated with less improvement in the post-treatment *externalizing* symptom score ($sr^2 = 0.015$, $t(459) = 3.32$, $P < 0.001$).

Association of individual child treatment factors with outcomes

Table 5 shows the association of each child treatment factor with outcomes. The higher dosage of child treatment factor 5 (Grief Work) was associated with a more improvement in in the *externalizing* symptom score ($sr^2 = 0.009$, $t(459) = -2.48$, $P = 0.013$).

Association of individual caregiver treatment factors with outcomes

Table 5 shows the association of each caregiver treatment factor with outcomes. The higher dosage of caregiver treatment factor 1 (Parenting Training and Attachment Skills Building) score was associated with less improvement in the post-treatment *externalizing* symptom score ($sr^2 = 0.013$, $t(459) = 3.09$, $P = 0.002$). The higher dosage of caregiver treatment factor 2

(Domestic Violence Psychoeducation and Safety Planning) score was associated with less improvement in the post-treatment *externalizing* symptom score ($R^2 = 0.005$, $t(459) = 1.96$, $P = 0.049$). The higher dosage of caregiver treatment factor 4 (Anger Management Training) score was associated with less improvement in the *internalizing* symptom score ($sr^2 = 0.006$, $t(459) = 0.92$, $P = 0.049$). The higher dosage of caregiver treatment factor 4 (Anger Management Training) score was associated with less improvement in the *externalizing* symptom score ($R^2 = 0.008$, $t(459) = 2.29$, $P = 0.022$).

DISCUSSION

This study aimed to determine the association between treatment components and mental health outcomes, especially internalizing and externalizing symptoms, among violence-exposed young children. First, treatment components that commonly appear in EBTs and usual care for young children exposed to violence were collapsed into a parsimonious set of treatment factors. Then, we examined which treatment factors were most

Table 4. Model coefficients with effect size indicators and inferential test for child characteristics

	n	Internalizing					Externalizing				
		M at T1	Change (Δ)	AP	B	ΔMR^2 or sr^2	M at T1	Change (Δ)	AP	B	ΔMR^2 or sr^2
Full sample symptom score at T1	459	57.04	–7.07***				58.41	–7.21***			
Age at T1					–1.51	0.016**				–0.85	0.004
Gender of child											
male	251	56.95	–6.07***	50.96	0.98	0.008*	59.93	–6.87***	52.19	1.00	0.006*
female	208	57.16	–8.27***	48.85	–1.13	0.008*	56.57	–7.36***	50.04	–1.15	0.006*
Race/ethnicity of child						0.017					0.010
White	231	58.12	–7.09***	50.41	0.43	0.001	60.05	–7.79***	51.27	0.07	0.000
Black	81	54.02	–4.98***	50.81	0.84	0.001	56.37	–3.96**	53.61	2.42	0.007*
Hispanic	70	57.34	–8.46***	48.70	–1.28	0.002	57.13	–8.6***	49.31	–1.88	0.004
Multiracial	60	56.73	–8.28***	48.62	–1.36	0.002	57.07	–7.72***	50.15	–1.04	0.001
Other	17	56.65	–6.65**	50.24	0.26	0.000	55.82	–7.41*	49.93	–1.27	0.000
Child: number of sessions					1.52	0.015**				1.85	0.019***
Caregiver: number of sessions					1.37	0.013**				1.66	0.015***
Cumulative risk					0.90	0.005				0.99	0.005

*$P < 0.05$, **$P < 0.01$, ***$P < 0.001$. M, mean; T1, the first timepoint (i.e., baseline); Δ, change; AP, Adjusted Post; B, Beta; MR^2, squared multiple correlations; sr^2, squared semi-partial correlations.

strongly associated with a reduction or increase in

Table 5. Model coefficients with effect size indicators and inferential test for child and caregiver treatment factors

	Internalizing		Externalizing	
	B	ΔMR^2 or sr^2	B	ΔMR^2 or sr^2
Child Treatment Factors				
Skills & symptom management training	0.25	0.000	0.38	0.001
Domestic violence treatment & safety planning	–0.33	0.001	–0.32	0.001
Community violence management	0.15	0.000	0.21	0.000
Sexual abuse treatment	0.14	0.000	–0.27	0.000
Grief work	–0.71	0.003	–1.25	0.009*
Caregiver treatment factors				
Parenting training & attachment skills building	0.92	0.006	1.54	0.013**
Domestic violence psychoeducation & safety planning	0.08	0.000	1.00	0.005*
Community violence management & substance abuse education	0.16	0.000	0.48	0.001
Anger management training	0.92	0.006*	1.15	0.008*
Social support building	–0.01	0.000	0.09	0.000
Sexual abuse treatment	0.76	0.004	0.28	0.340

*$P < 0.05$, **$P < 0.01$, ***$P < 0.001$. B, Beta; Δ, change; MR^2, squared multiple correlations; sr^2 squared semi-partial correlations.

work (i.e., grief and loss, dealing with separation)

post-treatment internalizing symptoms as well as post-treatment externalizing symptoms.

Overall, child symptoms improved over the course of treatment. Particularly, children who received *grief*

showed significant improvement in externalizing symptoms. Young children exposed to violence likely experience loss and separation. For example, due to child abuse or domestic violence, parents may separate,

or children may have to move away from their parents. Previous research underscores the importance of considering both trauma and grief reactions when treating children exposed to violence. since the interplay of trauma and grief may escalate child symptoms.[17] Healthy grieving process involves acknowledging negative emotions (e.g., sadness) and recalling positive aspects of the event or relationship.[17] For example, recalling and discussing good memories of the person from whom the child was separated and expressing emotions can help process the loss and bereavement. For children exposed to violence, however, when the child was separated from the perpetrator of abuse, recalling the event or relationship may trigger traumatic memories or mixed feelings, whereby they are likely to avoid recalling the event or relationship. This may hinder the process of bereavement. Moreover, if the violence occurred in the family and the caregiver is also traumatized by the partner, the caregiver might not be able to help the child with healthy grieving. Parental divorce or separation from parents are not typically considered to be traumatic. Yet such grief could exacerbate the symptoms of children who were exposed to violence. Thus, our findings suggest that acknowledging children's loss and sorrow expressed through externalizing behavior and helping them process bereavement may help alleviate their symptoms.

Additionally, high-need patients often face challenges that affect treatment engagement (e.g., parental mental illness and substance abuse), resulting in termination of treatment before the full EBT protocol has been completed.[18] Therefore, in clinical practice, clinicians often modify psychotherapy protocols or use only a subset of treatment components to better suit patients' needs, rather than implementing full protocols with fidelity. In a study of clinicians in child welfare organizations, 88% of them modified EBT protocols to better fit with the needs of children exposed to child maltreatment and violence.[19] Our study underscores the importance of acknowledging children's grief and prioritizing using grief work skills and approaches as needed since clinicians might not be able to implement the full EBT protocol due to an abrupt treatment termination.

Relative to the full sample, children of caregivers who received parent training and attachment skills building, domestic violence psychoeducation and safety planning, and anger management training showed less improvement in externalizing symptoms. Possibly, caregivers who had difficulties with parenting, parent-child attachment, and anger management, as well as those who had been exposed to unsafe environment due to domestic violence received those treatment components.

Those difficulties might have negatively impacted caregivers' treatment receptivity and responsivity. That is, young children may tend to show less or slower improvement when their caregivers have to address their own challenges, such as limited parenting skills and unsafe family environment. Thus, it may be critical to make sure that these caregivers' needs are recognized and addressed when providing treatment. For example, a comprehensive evaluation, including the family's living environment, access to necessary care (e.g., medical, welfare), social support, language barriers, mental health, and parenting skills, may be necessary to understand challenges that caregivers are facing. Upon their needs, it is critical to provide caregivers with optimal intervention (e.g., parent training, family therapy, referral to local resources).

Relative to the full sample, males showed less improvement in both internalizing and externalizing symptoms. Previous research has shown that females tend to exhibit more severe internalizing or posttraumatic stress disorder (PTSD) symptoms in reaction to traumatic events.[20] Yet little is known about treatment outcomes of *young* children exposed to violence in terms of gender. Our findings suggest that therapeutic techniques may be more effective for reducing symptoms in females.

Race/ethnicity was associated with the magnitude of change in externalizing symptoms. Relative to the full sample, Black children showed less improvement in externalizing symptoms. Black youth reported the highest lifetime prevalence rates of witnessing violence and experiencing physical and sexual assault relative to White and Hispanic youth.[21, 22] Possibly, Black children in our sample experienced higher rates or intensity of violence exposure than children form other ethnic backgrounds. Considering potential effects of environmental risk factors on the results, we conducted additional analyses while adjusting for the number of environmental risk factors (e.g., unsafe neighborhood); however, the pattern did not change. It is possible that this variable did not fully capture the complexity of environmental stressors that Black children experienced given that many of them came from neighborhoods with high rates of community violence and less access to resources. That is, Black children in our sample may have experienced a higher level of environmental stress without a corresponding increase in access to community supports, which may have deterred treatment progress. Our findings pose a question if race/ethnicity may have different levels of effects on treatment effectiveness in younger children and older children.

Children who received a higher number of

treatment sessions showed less improvement in externalizing symptoms. These findings build upon prior research. A study examined young children exposed to violence and found that the number of sessions children and caregivers attended was positively associated with improved outcomes.[12] Although our findings were inconsistent with their study, this is not altogether surprising. Another study found that, of over 2,300 adult patients, their mental health symptoms remarkably improved within the first 8 sessions, but the improvement curve became less steep afterwards. Perhaps, some children who showed a small amount of progress in the beginning stayed in treatment longer, whereas other children showed a greater and faster symptom improvement left the treatment earlier.[23] Likewise, the caregivers of children who showed a small amount of progress in the beginning may have stayed in treatment longer, whereby their children appeared to show a smaller symptom improvement.

There are seven major limitations to this study. First, we were unable to examine PTSD symptoms, including hyperarousal, avoidance, dissociation, and re-experiencing, in this very young group of children. Children exposed to violence are likely to exhibit these symptoms,[24] although young children may exhibit these symptoms in a less distinct way.[25] Second, we did not ask clinicians if they used a trauma narrative technique specifically, given the young age of the sample. Therefore, we were unable to examine how trauma narrative is related to the outcomes. A trauma narrative technique is more commonly used for older children. The average sample age was 3.4 years, suggesting some youth may not have been able to verbalize their violence exposure experiences, although a trauma narrative is often can be used for young children and is incorporated in many some EBT protocols.[26, 27] Third, because treatment components refer to a set of skills in this study, we did not identify specific techniques used in the treatment components. For example, in the treatment component of relaxation skills, we did not distinguish what techniques were used, including deep breathing or progressive muscle relaxation. Thus, this study does not provide clinical suggestions with a skill/technique level specificity. Fourth, this study did not consider the timing or phase of the usage of a particular treatment component. Kezelman & Stavropoulos (2012) proposed a guideline for treatment of complex trauma in which the early phase of treatment should focus on establishing safety and building coping skills, and the next phase of treatment should focus on trauma processing.[28] Fifth, this study targets children aged 1.5–5 years. Therefore, the results cannot be generalized to children 6 years and older. Sixth, a quasi-experimental nature of this study limits findings to being associations and does not allow causal inference. Seventh, clinicians self-reported the treatment components they used. Therefore, when different clinicians reported the use of a specific treatment component, there may have had a variability in terms of the content of the component.

While research on childhood trauma and PTSD has rapidly developed over the past few decades, much of our knowledge regarding trauma and PTSD has been informed by adult research.[29] Research on trauma of young children is even more limited. In conclusion, our findings suggest that treatment for young children exposed to violence delivered in community-based clinical settings may be effective overall. Particularly, grief work was significantly associated with alleviating child externalizing symptoms. Our results also indicate an essential need to incorporate developmental, cultural, and contextual (e.g., caregiver's needs) perspectives to fully address the needs of underrepresented populations.

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