

# Treatment of Complex Trauma on the Front Lines: A Preliminary Look at Child Outcomes in an Agency Sample

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**Abstract** This study describes a one-group pretest posttest evaluation of an agency-based treatment for children who endured complex trauma, including chronic physical abuse, sexual abuse, neglect, and witnessing domestic violence. Participants included 31 children who completed at least 3 months of treatment at a private, child welfare treatment clinic. Treatment was phase-oriented and idiographic, grounded in attachment-based, cognitive-behavioral, and creative arts approaches to complex trauma treatment, and incorporating research-supported interventions. Children completed the Trauma Symptom Checklist for Children at pre- and post-treatment, and client change in symptoms was evaluated. Significant improvement in symptoms of anxiety, depression, anger, dissociation, and sexual concerns was found following treatment. Effect sizes were in the moderate to large range. Client demographic and clinical characteristics were not associated with symptom improvement. Though preliminary, due to the small sample size and lack of control group, results contribute to the growing body of knowledge on client outcomes in front line clinical settings.

**Keywords** Complex trauma · Usual care · Child outcomes · Trauma-focused treatment · Child abuse

## Introduction

Exposure to traumatic events in childhood is prevalent, with general population studies showing that more than 60 % of youth had experienced a trauma in their lifetime, and 37 % had experienced multiple traumas (Copeland et al. 2007). Childhood trauma exposure that is characterized by the chronic experience of multiple co-occurring types of trauma often in the context of the caregiving system has been termed “complex trauma” (D’Andrea et al. 2012; Van Der Kolk 2005), and is characteristic of many children receiving trauma treatment in front line clinical settings. Complex trauma is associated with a host of negative outcomes in childhood and adulthood, including emotional and behavioral problems, relationship difficulties, substance use, suicide attempts, poor academic and work achievement, and physical health problems (Copeland et al. 2007; McGloin and Widom 2001; Westphal et al. 2011). The current study examined the potential impact of an agency-based approach to treatment for children with complex trauma.

## Clinical Presentation of Complex Trauma in Children

Complex trauma, as defined above, typically represents severe and ongoing maltreatment by a caregiver that begins early in life and that can overwhelm the child’s developing capacity to cope with stress (Chu and Lieberman 2010). The stress of the maltreatment is often compounded by placement into foster care and repeated changes in

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caregiver, preventing the formation of a stable attachment (Goldman Fraser et al. 2013). The chronic stress associated with exposure to complex trauma leads to the development of maladaptive coping responses that can manifest as symptoms traditionally associated with diagnoses of PTSD, internalizing and externalizing disorders, and substance use disorders (Gaskill and Perry 2014; Hodges et al. 2013). Thus, children with complex trauma typically present for treatment with high levels of impairment across multiple domains, including both the classic post-traumatic stress symptoms of avoidance, numbing, and hyperarousal combined with a broad range of emotional and behavioral symptoms including depression, anxiety, attention and memory problems, aggressive and delinquent behavior, substance use and somatic complaints (D'Andrea et al. 2012; Friedman 2013; Resick et al. 2012). Specific symptom profiles can vary widely, necessitating individual tailoring of treatment (Tarren-Sweeney 2013). This complex clinical presentation is thought to be due to the negative impact of prolonged early exposure to trauma on the brain's stress response and consequently on the development of core self-regulatory competencies (Chu and Lieberman 2010; Cook et al. 2003; Cook et al. 2005; Ford 2005; Gaskill and Perry 2014). Thus, the core deficit underlying symptom presentation that must be addressed in treatment is a pattern of dysregulation across multiple domains, including affective, physiological, attentional, behavioral, self, and relational (Kisiel et al. 2014; Stolbach et al. 2013; Van Der Kolk 2005).

### Approaches to Treatment for Complex Trauma in Children

Due to the broad range of clinical needs demonstrated by children with complex trauma, treatment is challenging. However, there is growing empirical support for several treatment approaches, including manualized intervention protocols as well as research-supported best practice guidelines (American Academy of Child and Adolescent Psychiatry 2010; Cook et al. 2003; Goldman Fraser et al. 2013; Kezelman and Stavropoulos 2012; Schneider et al. 2013; Silverman et al. 2008). Trauma Focused Cognitive Behavioral Therapy [TF-CBT: (Cohen et al. 2006a)] has the largest evidence base, with randomized trials supporting its success in improving symptoms in children who have experienced sexual abuse (Cohen et al. 2004a, 2005; Deblinger et al. 2006), domestic violence (Cohen et al. 2011), traumatic grief (Cohen et al. 2004b, 2006b), natural disasters (Jaycox et al. 2010), and complex trauma (Jensen et al. 2014). Relational and attachment-based approaches have also received empirical support with children and adolescents with complex trauma histories, including those in foster care (Arvidson et al. 2011;

Ghosh Ippen et al. 2011; Hodgdon et al. 2013; Kiniburgh et al. 2005; Lieberman et al. 2011; Lieberman and Van Horn 2006; Weiner et al. 2009). Somatosensory interventions including music, play and art therapy are often recommended for children with complex trauma to both promote modulation of regulatory processes and to access traumatic material that is thought to be stored in non-verbal parts of the brain (Gaskill and Perry 2014; van Westrhenen and Fritz 2014). Recent reviews of art therapy interventions indicated that existing research, which is largely descriptive and non-empirical, is not sufficient to determine effectiveness, though favorable outcomes from uncontrolled studies point to the potential of these methods with traumatized children (Eaton et al. 2007; van Westrhenen and Fritz 2014). Meta-analyses have supported the efficacy of play therapy for children, however studies covered a broad range of presenting problems and were not specific to trauma (Bratton et al. 2005; Ray et al. 2001). Though more rigorous empirical studies are needed, descriptive research and clinical wisdom support the use of creative arts interventions with traumatized children.

In addition to the research supporting particular theoretical orientations or therapeutic interventions, several sets of best practice guidelines for treatment of complex trauma have been published (American Academy of Child and Adolescent Psychiatry 2010; Cook et al. 2003; Kezelman and Stavropoulos 2012). These guidelines universally recommend phase-oriented treatment for complex trauma, in which the early phase of treatment is focused on establishing safety and developing and stabilizing core emotional and behavioral regulation competencies. Safety and stabilization are necessary for progression into the next phase of treatment, which is focused on trauma processing, with the goal of integrating the traumatic memories into a cohesive sense of self. The final phase of treatment is centered on consolidation of treatment gains to promote resiliency and engagement in family and community. AACAP also recommends that treatment be trauma-focused, include caregivers and other potential supportive adults, be tailored to the child's specific symptom profile and developmental and cognitive level, and focus both on symptom reduction as well as promoting resiliency and a positive developmental trajectory (American Academy of Child and Adolescent Psychiatry 2010). Given the neurobiological impacts of early chronic trauma, it is also recommended that trauma treatment target multiple levels of processing, including cognitive, emotional, and sensorimotor processing, which may be accomplished by integrating body-based and creative arts interventions with more traditional talk therapy (Gaskill and Perry 2014; Kezelman and Stavropoulos 2012).

## Treatment Outcomes Research on Complex Trauma: Application to Front Line Settings

Despite the proliferation of treatment approaches for complex trauma in children, knowledge of the efficacy of treatment for this population has lagged behind, particularly as it pertains to children seen in usual care settings (e.g., agency-based mental health clinics). The majority of existing outcome studies of child trauma treatments have been conducted in pure research settings, in the context of testing a highly scripted model targeted at a homogeneous group of clients. Studies of youth mental health treatments in general have found that manualized treatments that demonstrate strong evidence of efficacy in controlled research trials often do not fare as well when tested in usual care settings (Weisz et al. 2013). Several reasons have been offered for this discrepancy, including higher rates of co-occurring problems, less family support, and greater caregiver and family dysfunction in children presenting for treatment in usual care clinics compared to those seen in university-based research settings (Ehrenreich-May et al. 2011; Schoenwald and Hoagwood 2001; Shirk et al. 2011; Southam-Gerow et al. 2003). Additionally, highly-scripted manualized intervention protocols are infrequently implemented in front line clinical agencies (Allen et al. 2012; Allen and Johnson 2012; Borntrager et al. 2013; Kolko et al. 2009). This may be at least partly due to a perceived poor fit between the model as prescribed and the complex clinical presentation of usual care clients. Finally, in the real world of clinical practice, children with complex trauma are often seen in general mental health clinics where treatments are not specifically trauma-focused and traumatic stress symptoms are often mis-attributed to diagnoses such as attention deficit hyperactivity disorder and oppositional defiant disorder (Kisiel et al. 2014). Children with maltreatment histories who receive treatments that are not trauma-focused show higher rates of premature dropout and treatment nonresponse (D'Andrea et al. 2012; Ford et al. 2013; Lau and Weisz 2003). These children show more positive outcomes when provided with treatments that specifically address trauma reactions and symptoms, particularly the core disturbances of affect dysregulation, attention and consciousness, interpersonal skills, and attributions and schemas (Ford et al. 2013).

The next steps for the trauma treatment field are to determine how research-supported treatment approaches are translated into clinical practice and the outcomes that can be achieved in usual care settings (Schneider et al. 2013). Intervention research is needed that focuses on the children who are being referred to treatment in the real world and the treatments that are being delivered to them by front line therapists (Weisz et al. 2013). The study of usual care treatments can serve as an important source of information

regarding how to best make treatment work within the child mental health ecosystem (Weisz et al. 2013).

### Study Aims and Hypotheses

The current study describes a first look at outcomes from the Trauma Recovery Program (TRP), a trauma-focused treatment approach provided by a front line clinical agency serving children who have experienced complex trauma. The TRP is based on an integrated theoretical framework that incorporates attachment-based approaches, cognitive-behavioral interventions, and creative arts therapy. Treatment is phase-oriented, flexible, adapted as needed to meet the individual client's needs, and trauma-focused, in accordance with current practice guidelines for treatment of childhood trauma (American Academy of Child and Adolescent Psychiatry 2010; Cook et al. 2003). The theoretical framework and phased treatment process of the TRP are described in detail in the Methods section. The trauma-focused treatment delivered in this study has high ecological validity, as it is more comparable to what is typically found in real world agencies than manualized treatment models that require extramural training and fidelity support, often beyond the reach of community clinics. Using a standardized assessment instrument, the current study examined change in traumatic stress and co-occurring emotional and behavioral symptoms following treatment in a sample of children treated for complex trauma at a usual care clinical agency. The primary study hypothesis was that symptoms of traumatic stress and co-occurring problems, as measured by the Trauma Symptom Checklist for Children, would decline significantly following treatment. Potential demographic and clinical correlates of symptom change were also examined as a post hoc analysis.

### Method

The study was reviewed by the governing institutional review board (IRB) and was determined to be exempt from IRB oversight as it was a secondary data analysis of existing case file data collected as part of routine program administration.

### Study Participants

Convenience sampling was used for this study. Participants included 31 clients enrolled consecutively into the Trauma Recovery Program (TRP) at an urban child welfare treatment agency between January 1, 2009 and July 31, 2013 who completed at least 3 months of treatment and at least two standardized assessments. A total of

319 children were referred to the TRP during the study period, resulting in 184 cases opened for services. Of these, 142 completed intake (the first four sessions) and 122 remained in treatment long enough to be eligible for a post-assessment (minimum of 3 months and/or 12 sessions) and thus comprise the group eligible for inclusion in the current study. Of these, only the 31 children with available pre- and post- data on the Trauma Symptom Checklist for Children (TSCC) were included. Figure 1 presents a diagram detailing the flow of clients through the study.

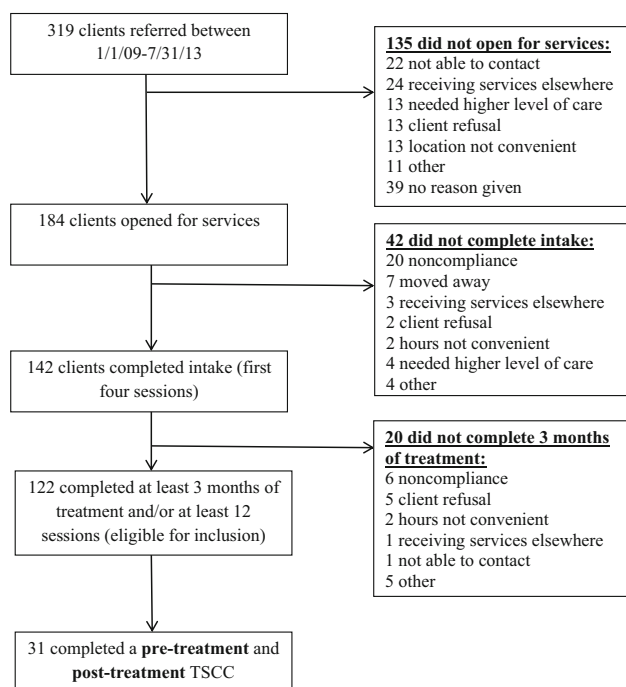
Reasons for attrition between referral and case opening, between case opening and intake, and between intake and follow-up are shown in Fig. 1. The 184 opened cases were compared to the 135 referrals that never opened on demographic and clinical characteristics assessed at referral. The following significant differences were found: opened cases were more likely to have experienced neglect ( $\chi^2(1) = 5.64, p < .05$ ), sexual abuse ( $\chi^2(1) = 5.36, p < .05$ ), and to be in foster care ( $\chi^2(1) = 15.57, p < .001$ ). Additionally, the following significant differences were found between the 142 children that completed intake and the 42 opened cases that never progressed to intake: Children who completed intake were more likely to have witnessed domestic violence ( $\chi^2(1) = 3.94, p < .05$ ) and to have experienced sexual abuse ( $\chi^2(1) = 4.54, p < .05$ ). Finally, the 31 children in the final analytic sample were compared to the 91 who were eligible for

inclusion in the study on demographic and clinical characteristics (see Table 1). The analytic sample was significantly older than the eligible sample ( $t(84) = -2.39, p < .05$ ), most likely explained by the fact that the TSCC is only valid for children ages 8 years and older, and reported significantly more family violence compared to the eligible sample ( $\chi^2(1) = 4.53, p < .05$ ). No other significant group differences were found, suggesting that the analytic sample is adequately representative of the broader population of clients attending treatment at the TRP.

As shown in Table 1, the analytic sample ( $n = 31$ ) was mostly female (61 %), Hispanic (39 %) or African American (36 %), with an average age of 12.15 years ( $SD = 2.85$ , range 8–17 years, 55 % age 8–12 years and 45 % age 13–17 years). Clients were referred to the TRP from the foster care system (52 %), the city child protection agency (10 %), and other sources in the community (39 %). Study participants reported histories of sexual abuse (48 %), physical abuse (42 %), neglect (39 %), witnessing domestic violence (29 %), other family violence (39 %) and traumatic grief or bereavement (16 %), with 77 % reporting multiple trauma types. Other demographic and clinical information can be found in Table 1.

Of the 31 study participants, 25 (81 %) had their cases closed prior to study analysis and 6 (19 %) were currently open cases. Among the 25 closed cases, 56 % closed prior to completion of treatment goals. Reason for case closure among those who terminated prematurely included client elected to receive services elsewhere (36 %); client refused to participate in treatment (29 %); client noncompliance with appointments (7 %); family moved away (7 %); available hours were not convenient for client (7 %); and reason not specified (14 %).

The 31 study participants were treated by 9 therapists. Therapists were mostly female ( $n = 8$ ), White ( $n = 6$ ), and average age was 31 years ( $SD = 6.60$ ). Eight therapists had masters ( $n = 7$ ) or doctoral ( $n = 1$ ) degrees and one was a social work intern. Years of prior clinical experience ranged from 1 to 15, with an average of 5 years ( $SD = 4.30$ ). While study therapists overall endorsed an eclectic approach to treatment, several had received some specialized training: 3 received training in Family Therapy, 2 in art therapy, 1 in psychoanalytic therapy, and 1 in play therapy. Additionally, all therapists received formal training in TF-CBT (Cohen et al. 2006a), and two had received formal training in the Attachment Regulation and Competence framework (Blaustein and Kinniburgh 2010). All received extensive training and supervision from the clinical director of the TRP, as described below. The 9 therapists varied in the number of study participants treated, with 2 therapists treating 1 client, 1 therapist treating 2 clients, 2 therapists treating 3 clients, 1 therapist treating 4



**Fig. 1** Participant flow through the study from referral to analysis

**Table 1** Demographics of the analytic sample (n = 31) compared to the eligible sample (n = 91)

	Eligible sample (n = 91)	Analytic sample (n = 31)
Gender		
Male	45 %	39 %
Female	55 %	61 %
Age (M/SD)*	10.48 (4.56)	12.15 (2.85)
Race		
Hispanic/Latino/Latina	35 %	39 %
African American	31 %	36 %
Bi/Multicultural	23 %	23 %
Other	11 %	3 %
Referral source		
Foster care system	50 %	52 %
Child protection agency	13 %	10 %
Other	37 %	39 %
Clinical history		
Sexual abuse	40 %	48 %
Physical abuse	32 %	42 %
Neglect	33 %	39 %
Witnessed domestic violence	48 %	29 %
Other family violence*	20 %	39 %
Traumatic grief/bereavement	8 %	16 %
Multiple traumas	64 %	77 %
Family history of substance use	68 %	77 %
Family history of mental illness	37 %	36 %
In foster care at referral	45 %	52 %

\*  $p < .05$ 

clients, 1 therapist treating 5 clients, and 2 therapists treating 6 clients.

### Trauma Recovery Program (TRP) Description

The TRP is an agency-based, outpatient treatment program for children ages 5–18 years old who have experienced trauma, including physical abuse, sexual abuse, witness to interpersonal or community violence, traumatic bereavement, disruptions to the caregiving system, and/or chronic exposure to the stress of parental substance abuse, mental illness, or neglect. The majority of children referred to the TRP have experienced complex trauma. On average, children remain in the TRP for 10–18 months, however no specific treatment length is prescribed as treatment is designed to be flexibly adapted to the individual needs of the child. The average caseload for TRP clinicians is 15.

#### Theoretical Framework

The TRP utilizes a child-centered, trauma-informed framework that is systemic, strengths-based, and neurobiologically informed. The framework integrates ideas

from several theoretical orientations underlying research-supported approaches to treating complex trauma, including attachment-based approaches, cognitive-behavioral approaches, and creative arts approaches.

*Attachment-Based Approaches* The early development of a healthy attachment to a caregiver is critical to the development of emotional, social, and self-regulatory capabilities that help moderate the impact of stress. Caregiving systems that are characterized by chaos, stress, or danger combined with inconsistent or absent soothing and regulation can lead to overwhelming arousal for children, negatively impacting their physical, behavioral, cognitive, social, and emotional development (Bremner and Vermetten 2001; Perry and Pollard 1998; Schore 2001). Traumatic attachment histories in children may affect the development of the areas of the brain responsible for regulating affect, which can result in a child experiencing any arousal in the body as a sign of danger, and being overwhelmed or frightened by emotions (Blaustein and Kinniburgh 2010; Schore 2002). Though impaired attachment systems can create tremendous developmental difficulties, attachment systems that are characterized by safety

and attunement can be hugely reparative and protective (Ludy-Dobson and Perry 2010). Guided by this principle, the TRP views the therapist-client relationship as a vehicle to healing by creating the clinical space as safe, predictable, structured, and boundaried. Additionally, therapists aim to create opportunities for caregivers to be experienced by the child as safe and healing, and to support the child in developing skills needed for tolerating and managing affect.

*Cognitive-Behavioral Approaches* Cognitive-behavioral approaches to trauma treatment are grounded in the belief that when traumatic events are left unprocessed, they can create barriers to a child's capacity to be fully engaged in the present (Cohen et al. 2012). Children with unprocessed trauma often react to new situations in ways that are driven by reminders of past experiences of danger. Thus, engaging children in assigning language and meaning to their traumatic experiences becomes a critical component in their healing, as it helps to create a sense of mastery or control, correct distortions that can exacerbate self-blame, and create a forum by which they begin to process and integrate the traumatic experiences (Cohen et al. 2006a). Cognitive processing of the trauma is aimed at breaking the association between thoughts and reminders of the traumatic experience and the overwhelming negative emotions of terror, helplessness, shame and rage (Cohen et al. 2006a).

*Creative Arts Approaches* Creative arts approaches to treatment of complex trauma are based on the assumption that the verbal part of the brain shuts down during a traumatic experience, and thus the memory of the trauma is stored implicitly via bodily sensations rather than explicitly via language and cognitions (Schiffer et al. 1995; van der Kolk and van der Hart 1989). Thus, the sole use of talk therapy with traumatized children may not allow access to the trauma memory, which is stored in the non-verbal part of the brain. Integration of creative forms of expression, including play, sand tray, music, or art into treatment may allow children to express these implicit memories in a non-verbal way, thereby laying the groundwork for later integration of the trauma narrative (Gil 2011; Malchiodi 2008).

### *Treatment Process*

In accordance with best practice guidelines for treatment of complex trauma (American Academy of Child and Adolescent Psychiatry 2010; Cook et al. 2003), treatment in the TRP is phase-oriented and focused on four target areas for change: symptom reduction, increase in adaptive coping strategies, improvement in family relationships, and integration of traumatic material. Treatment includes a mix of individual and family sessions, as well as collateral

sessions with members of the extrafamilial system (e.g., foster care caseworkers, psychiatrists, probation officers, teachers). The following sections describe the three phases of treatment in the TRP, including treatment goals and specific interventions implemented towards achievement of those goals. As the TRP approach is idiographic by design, selection of specific interventions within each phase is guided by the individual presentation of each client, including their developmental and cognitive level (which may or may not correspond to their chronological age), their symptom profile, and their caregiving situation.

*Early Phase: Relational Safety and Stabilization* The primary goal of the early phase is to create relational safety within the therapeutic relationship. Grounded in the belief that the experience of trauma represents at its core a loss of agency or control (Herman 1992), the early phase of treatment is targeted at optimizing every opportunity to recreate the world for the child as safe, structured, and predictable. Thus, the child's voice is privileged in decision-making regarding how to begin and end sessions, what activities to engage in, and with whom and how to share information. Privileging the child's voice allows the therapist to support the child's experience of the therapy room as a place that is emotionally and physically safe (Sheinber and True 2008). Non-directive play interventions are used in this phase to create opportunities for the therapist to attune to the child's non-verbal communications (Gil 1991). The early phase also includes the assessment of information that will inform specific treatment goals and intervention selection. Information is gathered via multiple sources, including standardized assessment measures and clinical interviews with the child, biological parents, current caregivers, and teachers. The therapist may also provide psychoeducation to the child and caregiver regarding the impact of trauma and the process of treatment (Cohen et al. 2012).

*Middle Phase: Affect Regulation and Coping* The middle phase of treatment is focused on supporting children in affect identification and modulation and teaching adaptive coping skills. Traumatic stress can overwhelm a child's ability to remain connected to their emotional experiences and to utilize adaptive strategies to manage emotional overwhelm. Problematic behaviors and symptoms often develop as survival strategies in the face of extreme stress, and will be reduced when they are replaced with more adaptive coping strategies. Increasing a child's awareness into how emotions are experienced physiologically helps them to better attune to their affective processes and arousal states, thereby laying the groundwork for teaching more adaptive coping skills to manage emotions. Thus, the middle phase of treatment includes structured interventions

designed to support children in differentiating between emotional states, developing language to label those states, and distinguishing gradations of emotions (Blaustein and Kinniburgh 2010). Once affective awareness has been developed, treatment focus shifts to teaching skills that increase the child's capacity to modulate their arousal states. Such skills can include progressive muscle relaxation, belly breathing, visualization exercises, mindfulness and other physically- and cognitively-based strategies that decrease affective arousal and promote relaxation and regulation (Cohen et al. 2006a).

Simultaneous to the individual work with the child, the middle phase of treatment includes significant collateral work with the caregiver(s) and dyadic work with the caregiver(s) and child. The goal is to increase caregiver capacity to more accurately read, understand, and respond to the child's unmet attachment needs. Thus, this phase integrates interventions aimed at helping caregivers interpret the child's behavior, attend to their underlying emotional needs, and develop responses to behaviors that are consistent, predictable, and structured (Blaustein and Kinniburgh 2010). Interventions focused on co-regulation (i.e., child and caregiver modulating arousal states in tandem (Blaustein and Kinniburgh 2010)) may also be integrated into this phase and can include having the child "teach" the parent the breathing exercises they learned, practicing visualization exercises together, rhythmically passing a ball back and forth, body scans to increase recognition of physiological arousal, and other mindfulness based practices that support recognition and modulation of affective arousal (Pederson 2012).

*Later Phase: Integration of Traumatic Material* Once affect modulation and coping skills have been refined, the later phase of treatment focuses on integrating the traumatic experience into the child's "life story," and on creating opportunities for relational healing and repair of ruptured attachment bonds. The process by which the trauma experience is integrated is child-centered and may include the use of a written narrative, puppets, sand tray, or other creative means (Cohen et al. 2006a; Gil 2011). Children with a history of disrupted attachments and fragmented early childhood memories may create a life book or timeline that organizes the different families they have known and major events that have occurred, emphasizing the full range of emotions associated with memories and experiences (Cohen et al. 2012). A key component of the later phase of treatment is attending to meaning making and a process whereby children and caregivers begin to identify how their collective experiences have created a context for the present. Thus, the therapist creates a space for the child to observe the influence of their past experience on their systems of meaning, that includes how they

see the world and themselves and others within the world (Cohen et al. 2006a). Successful trauma processing includes the recognition and thoughtful examination of how trauma has shaped the child's core belief system, and how maladaptive beliefs can be re-shaped into adaptive ones (Cohen et al. 2012). Critical to the success of this phase of treatment is having a nurturing adult bear witness to the child's lived experiences and the meaning they have derived from those experiences. Emphasis is placed on the caregiver attuning to the child's affective experience, rather than to the details of the story, to promote the social connectedness that is instrumental in the child's healing (Siegel and Hartzell 2003).

#### *Fidelity Monitoring*

TRP clinicians meet weekly for individual supervision with the program director to review interventions utilized, client response, and next steps. More formal fidelity monitoring occurs for each case via an intake review meeting, quarterly treatment planning review meetings, and team-based case review meetings. During the intake review meeting, clinicians work with the client and program director to identify the primary presenting problem based on assessment information collected, and conceptualize a course of treatment and sequencing of interventions and session types that is consistent with the TRP framework. In quarterly treatment planning review meetings, clinicians and the program director review the customized treatment plan in terms of progress on treatment goals via standardized assessments, changes in symptoms, adaptive coping strategies employed, caregiver attunement, and general client functioning at home, school, and in session. Team-based case reviews provide an opportunity for clinicians to present clinical challenges or therapeutic impasses to the clinical team and receive feedback as well as support in adhering to the TRP framework. The treatment plan conceptualized in the intake review provides a guiding framework for the ongoing monitoring of each case, allowing for adjustments as needed over time based on client progress.

#### **Primary Outcome Measure: Trauma Symptom Checklist for Children**

The Trauma Symptom Checklist for Children [TSCC; (Briere 1996)] is a standardized questionnaire that asks children to self-report on 54 symptoms commonly associated with complex trauma exposure in children (Briere 1996). The TSCC yields scores on six clinical scales: Anxiety, Depression, Posttraumatic stress, Dissociation, Anger, and Sexual concerns. The Anxiety scale includes symptoms of generalized anxiety, hyperarousal, worry, and

fear. The Depression scale includes symptoms of sadness, loneliness, tearfulness, guilt, and self-denigration. The Anger subscale includes angry thoughts, feelings, and behaviors, such as hatred, wanting to yell or hurt people, and arguing or fighting. The Posttraumatic stress scale includes symptoms of intrusive thoughts, nightmares, fears, and avoidance. The Dissociation scale assesses the extent of dissociative experiences experienced by the child, including derealization, mind going blank, emotional numbing, daydreaming, memory problems, and dissociative avoidance. The Sexual Concerns scale measures sexual distress and preoccupation. Higher scores on all scales reflect greater symptomatology, with T-scores at or above 65 considered clinically significant (above 70 on the Sexual concerns subscale). The TSCC is widely used to measure symptom improvement in studies of trauma treatment outcomes (Berkowitz et al. 2011; Cohen et al. 2005; Ford et al. 2012; Kolko et al. 2011; Lanktree and Briere 1995; Nolan et al. 2002).

The TSCC was validated on a general population sample of 3008 boys and girls of varied racial and socioeconomic backgrounds between the ages of 8 and 16 years (Briere 1996). The TSCC validation sample was 53 % female, 44 % Caucasian, 27 % Black, 22 % Hispanic, 17 % ages 8–12 years, and 83 % ages 13–16 years. Reliability in the validation sample was high, with alphas ranging from .82 to .89 for five of the six subscales. Reliability of the Sexual concerns scale was lower, but still good ( $\alpha = .77$ ). The TSCC scales also demonstrated adequate convergent and discriminant validity, with correlations between the subscales and the Internalizing and Externalizing dimensions of the Youth Self-Report ranging from .47 to .82 (Briere 1996). Reliability and validity of the TSCC scales have also been established in clinical samples (Briere 1996; Lanktree et al. 2008; Nilsson et al. 2008; Sadowski and Friedrich 2000). Reliability in the current sample was high for all scales at baseline and follow-up (alphas ranging from .80 to .93), with the exception of the sexual concerns subscale at baseline, which had low reliability in the current sample ( $\alpha = .52$ ), likely due to infrequent endorsement of sexual concerns items. As in other studies using the TSCC [e.g., (Berkowitz et al. 2011; Cohen et al. 2005)], participants' raw scores on each of the six symptom scales were used as the primary outcomes in the current study.

### Data Collection Procedures

TRP clients are administered the TSCC by their therapist as part of standard program activities during intake (the first four sessions), and every 3 months thereafter. Scores are recorded in the agency's client data system. This study was a secondary analysis of TSCC data, which were gathered by the agency's research department from the client data system for analysis,

along with client demographic information and number of treatment sessions attended. All data were compiled into a separate file for analysis, in which clients were coded by numeric ID, and no identifying information was included. For the purposes of the current study, the pre-treatment assessment refers to the TSCC administered during intake. The post-treatment assessment used for analysis was each client's most recently completed TSCC. For all but 6 cases, the post-treatment assessment was conducted within 3 months of their last completed treatment session. The length of time between pre- and post-assessment varied widely across clients, ranging from 2 to 26 months ( $M = 8.98$ ,  $SD = 6.12$ ), and was highly correlated with the number of treatment sessions attended ( $r = .83$ ,  $p < .01$ ). Due to the small sample size and preliminary descriptive nature of the analyses, the number of sessions attended was not controlled for in analyses of symptom change, but was examined post hoc as a potential correlate of symptom change.

### Study Design and Analysis Plan

The current study used a pre-experimental single group pretest–posttest design to examine client improvement following treatment for complex trauma in a usual care setting (Campbell and Stanley 1963). Similar designs have been used in other studies to test the initial impact of treatment delivered in agency settings (Becker et al. 2011; Piacentini et al. 2002; Saxe et al. 2005; Vernberg et al. 2004; Williams 2009). Similar to the Williams study, clients' initial ratings were compared to their most recent outcome ratings (Williams 2009). Evidence of treatment effects from single group pretest–posttest designs is an important step in justifying the expense and resources needed to conduct a larger scale controlled trial (Vernberg et al. 2004).

Due to the small study sample and pre-experimental design, simplicity was favored in the analysis plan. Paired samples *t*-tests were conducted on each of the TSCC subscales to test the primary study hypothesis that clients would show significant declines in symptoms from pre- to post-treatment. The Bonferroni correction was applied to adjust for multiple comparisons, with alpha set at .008. Cohen's *d* was calculated as a measure of effect size for each comparison. This method of analysis has been used in other studies with similar designs [e.g., (Becker et al. 2011; Lanktree et al. 2012; Salloum 2008; Saxe et al. 2005)]. To examine the association between client demographic and clinical characteristics and change in TSCC symptoms, residual gain scores were computed for each TSCC scale. To calculate residual gain scores, pre- and post-treatment TSCC scale scores were converted to Z scores, and then change was calculated by subtracting the pre-treatment score, multiplied by the correlation between pre- and post-



treatment scores, from the post-treatment score (Residual Gain =  $Z_{\text{post}} - Z_{\text{pre}} * r_{\text{prepost}}$ ) (Steketee and Chambless 1992). Residual gain scores are preferable to raw change scores because they control for differences across clients in pre-test score as well as for measurement error (Steketee and Chambless 1992). After calculation, residual gain scores on each of the TSCC scales were re-coded so that higher residual gain scores represented greater improvement in symptoms. Bivariate correlations between TSCC residual gain scores and the following demographic and clinical characteristics were examined: child age, child sex, child race, foster care status, therapist, and number of sessions attended. This method of examining correlates of treatment outcome has been used in other studies (Boelen et al. 2011; Ellis et al. 2012; Saxe et al. 2005).

## Results

### Treatment Retention

The average number of sessions attended for the analytic sample was 39.13 (SD = 23.29), with a range of 9 to 110 sessions. Types of sessions attended included individual child sessions ( $M = 22.87$ ;  $SD = 14.24$ ; range 5–57), family sessions ( $M = 7.19$ ;  $SD = 5.96$ ; range 0–18), and collateral sessions, including work with individuals outside the immediate child-caregiver system ( $M = 7.71$ ;  $SD = 7.88$ ; range 1–37). No significant demographic differences were found in the total number of sessions attended, however girls had significantly more collateral sessions than boys ( $t(25.45) = -2.36, p < .05$ ).

### Descriptive Data on Trauma Symptoms at Pre- and Post-Treatment

Table 2 presents descriptive data on clients' trauma symptoms as measured by the TSCC at pre- and post-

treatment. As shown, average raw scores pre-treatment ranged from a low of 3.48 (SD = 3.10) for sexual concerns to a high of 10.65 (SD = 7.23) for posttraumatic stress symptoms. At post-treatment, average raw scores ranged from a low of 2.03 (SD = 2.48) for sexual concerns to a high of 6.65 (SD = 7.09) for posttraumatic stress symptoms. The proportion of the sample falling above the clinical cutoff on the symptom scales ranged from 16 to 29 % at pre-treatment and from 0 to 10 % at post-treatment. At pre-treatment, 45 % of the sample fell above the clinical cutoff on at least one symptom scale, compared to only 13 % at post-treatment, a statistically significant difference ( $\chi^2(1) = 5.58, p < .05$ ). Independent samples *t*-tests were conducted to compare demographic subgroups on pre-treatment symptoms and only one significant difference was found: Multicultural children reported significantly more anger prior to treatment than children from single racial backgrounds ( $t(29) = -3.52, p < .001$ ).

### Analysis of Change in Trauma Symptoms from Pre- to Post-Treatment

The results of the paired samples *t*-tests testing for change from pre- to post-treatment on the six TSCC scales are shown in Table 2. Statistical significance was set at  $p < .008$ . Significant declines following treatment were found in anxiety ( $t(30) = 3.33, p = .002, d = 0.60$ ), depression ( $t(30) = 3.54, p = .001, d = 0.64$ ), anger ( $t(30) = 3.56, p = .001, d = 0.64$ ), dissociation ( $t(30) = 3.64, p = .001, d = 0.65$ ), and sexual concerns ( $t(30) = 3.00, p < .005, d = 0.54$ ). Posttraumatic stress symptoms declined as well, but did not reach statistical significance. According to Cohen (1988), effect size estimates can be interpreted as small ( $d = 0.0–0.20$ ), medium ( $d = 0.30–0.50$ ), and large ( $d = 0.60–0.80$ ). Effect sizes for the significant symptom declines were in the medium to large range.

**Table 2** Descriptive data and change on pre- and post-treatment trauma symptoms for the full analytic sample (N = 31)

	Pre-treatment		Post-treatment		Mean difference test		
	Mean (SD)	% above clinical cutoff	Mean (SD)	% above clinical cutoff	<i>t</i>	<i>p</i>	Cohen's <i>d</i>
Anxiety	7.87 (5.85)	29 %	4.52 (5.23)	10 %	3.33	.002	0.60
Depression	6.81 (5.21)	16 %	3.65 (3.59)	3 %	3.54	.001	0.64
Anger	9.23 (7.09)	16 %	4.65 (4.37)	0 %	3.56	.001	0.64
Posttraumatic stress	10.65 (7.23)	23 %	6.65 (7.09)	10 %	2.78	.009	0.50
Dissociation	9.58 (6.33)	23 %	5.45 (4.73)	3 %	3.64	.001	0.65
Sexual concerns	3.48 (3.10)	16 %	2.03 (2.48)	7 %	3.00	.005	0.54

Cutoff for statistical significance was set at  $p < .008$

### Correlates of Change in Trauma Symptoms from Pre- to Post-Treatment

Bivariate Pearson's correlations were computed between residual gain scores on each TSCC scale and client demographic and clinical characteristics to determine potential correlates of symptom change. Results are presented in Table 3. Overall, no significant correlations were found, suggesting that the symptom improvement demonstrated from pre- to post-treatment was largely consistent across clients regardless of age, sex, race, foster care status, therapists, and number of sessions attended. The one exception was that a significant correlation was found between number of sessions attended and client change in posttraumatic stress symptoms ( $r = .37, p < .05$ ), with clients who attended more sessions showing greater improvement in posttraumatic stress symptoms.

### Discussion

This study presents preliminary clinical outcomes for 31 children receiving treatment for complex trauma at an urban child welfare agency. Results show significant improvement in symptoms of anxiety, depression, anger, dissociation, and sexual concerns following treatment, with medium to large effect sizes. Posttraumatic stress symptoms also declined following treatment, however did not reach statistical significance. Additionally, the proportion of the sample with clinically significant symptoms (above the clinical cutoff) declined significantly following treatment, indicating clinically meaningful change. Child demographic and clinical characteristics were generally not related to symptom reduction in this sample. This finding is consistent with the idiographic nature of the treatment, which accommodated client individual differences by design. One exception is that clients who attended more sessions showed greater declines in posttraumatic stress symptoms.

Study findings add to the growing body of literature demonstrating significant symptom reductions following treatment in children with trauma (Saxe et al. 2005; Schneider et al. 2013; Silverman et al. 2008). The pattern of symptom reduction found is consistent with the phase-based approach to treatment advocated for complex trauma and applied in the TRP (American Academy of Child and Adolescent Psychiatry 2010; Cook et al. 2003). Significant improvements were found in behavioral and emotional symptoms that underlie the core regulation deficits seen in children with complex trauma, which are the targets of the early and middle phases of treatment. The classic post-traumatic stress symptoms, which are expected to resolve in later phases of treatment, following the integration of the trauma narrative, improved to a greater degree for those clients who attended more sessions.

In interpreting the findings, it is important to note that the average number of sessions attended in the current study (39 sessions) is much higher than in most trauma treatment studies, which generally report average number of sessions attended in the 12–16 range (Cohen et al. 2004a, 2005). Several studies have demonstrated positive outcomes following this shorter length of treatment (e.g., Deblinger et al. 2011; Jensen et al. 2014), which suggests the possibility that the efficiency of the treatment under study could be improved. However, it has been acknowledged that children with complex trauma may require longer stays in treatment than children with more standard post-traumatic stress symptoms without accompanying severe regulation difficulties (Cohen et al. 2012). In the general child mental health literature, studies of usual care treatment are mixed on whether there is a significant dose effect (Garland et al. 2014). While some studies support the “more is better” view, others have demonstrated that most change occurs early in treatment, suggesting that there may be an optimal treatment dose (Garland et al. 2014). Further research with larger samples specific to the complex trauma population is needed to determine what the optimal dose may be, recognizing that the optimal length of stay

**Table 3** Bivariate correlations between TSCC residual gain scores and client demographic and clinical characteristics

	Age	Sex	Hispanic	African American	Multiracial	Foster care	Therapist	Number of sessions
Anxiety	.08	−.08	−.07	−.12	.12	.20	−.08	.33
Depression	.25	−.23	.14	−.32	.10	.36	−.22	.28
Anger	−.04	−.14	−.02	−.14	.08	.29	−.01	.19
Posttraumatic stress	−.05	.00	−.08	.09	.00	−.07	−.06	.37*
Dissociation	.13	−.09	.24	−.31	−.04	.22	−.15	.20
Sexual concerns	−.13	−.01	.07	−.14	−.02	.20	−.26	.23

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .00$

likely varies based on client and family characteristics and that treatment length is often driven by factors external to the client's clinical needs, such as insurance, funding requirements, and agency regulations (Amaya-Jackson and DeRosa 2007). Additionally, longitudinal follow-up studies are needed to determine whether symptom improvements achieved early in treatment are maintained in the long term.

It was somewhat surprising that foster care status did not emerge as a significant correlate of symptom improvement. Research has documented placement instability and long stays in foster care as predictors of more negative outcomes in child welfare involved families (Aarons et al. 2010; Lewis et al. 2007; Newton et al. 2000; Rubin et al. 2007). Moreover, given the emphasis on family work in the TRP, the changes in caregivers that often occur for children in foster care are likely to complicate treatment (Ellis et al. 2012; Taussig and Raviv 2014), and studies of other trauma treatments have suggested that family and environmental stability may be an important mechanism of action for symptom improvement (Saxe et al. 2005). The lack of relationship in the current study may be explained by the single point-in-time measure of foster care status at baseline, which does not capture the complexity of placement instability associated with foster care for many children. A more dynamic measure of the foster care experience is likely required to fully understand its impact on treatment outcomes.

### Study Limitations and Strengths

There were several important limitations to the study design, which must be considered when interpreting the findings. First, and most notably, due to the lack of a control group, findings must be viewed as preliminary and descriptive, as symptom improvements may be at least partly due to the passage of time and may not reflect a true treatment effect. Second, the small sample from a single agency limits the generalizability of findings. Third, the absence of data on treatment implementation, specifically fidelity to the prescribed approach, is a significant limitation. Without such data, it is not possible to specify the core components of the treatment, as well as whether treatment was delivered with consistency across therapists and clients. The small sample size precluded an examination of therapist effects, but given the wide variation in therapist background and training, some inconsistency in delivery is likely. Finally, it should be noted that despite the longer than average stay in treatment, nearly half of the study sample terminated prematurely, prior to completion of treatment goals. Thus it is possible that the symptom improvements demonstrated may be temporary and may not be associated with longer-term positive outcomes. Longitudinal follow-up studies that include assessment of

functional and behavioral outcomes are needed to determine the long-term impact of the treatment.

Despite these limitations, the primary strength of the study is its high ecological validity. Studies such as this one, which focus on treatments delivered by therapists in usual care, are sorely needed to inform best practice. The past decade has seen several calls for research on treatment processes and outcomes in usual care settings (Bickman 2000; Warren et al. 2010; Weisz et al. 2006). Research that examines usual care practice can provide a complementary contribution to the growing literature on implementation and outcomes of research-supported manualized treatment protocols. Specifically, descriptive data on treatments and outcomes in usual care is needed to identify client, provider, and treatment factors that are associated with positive outcomes, which can ultimately inform the implementation of research-supported practices in usual care settings (Garland et al. 2014).

### Implications for Research and Clinical Practice

In light of the small sample size and lack of control group, the primary implication of the current study relates to the need for more research. Given the nascent literature on treatments for complex trauma in usual care settings, pre-experimental studies such as this one represent an important first step in determining the outcomes that can be achieved for this population and the interventions that are most effective. Findings suggest the potential of the agency-based treatment presented in this study for improving symptoms in children with complex trauma.

Further research is needed in the following areas. First, implementation data is essential to ensure consistency of treatment delivery across therapists and clients and to be able to delineate the specific interventions that are implemented. Such data could ultimately be used to examine which specific components of treatment are most strongly associated with positive outcomes. This type of process-outcome research is essential for informing clinicians about how to best tailor treatment to the individual needs of the client, as it would provide empirical data on which specific interventions are most effective for particular client subgroups. Second, studies with larger samples and appropriate comparison groups should be conducted to rigorously test treatment impact. Third, further study of the impact of child demographic and clinical characteristics, as well as characteristics of the treatment itself, on treatment retention and outcomes is needed. Specifically, research should examine the impact of foster care placement instability, trauma severity, caregiver factors, clinician characteristics, as well as session type (individual, family, collateral) on treatment implementation and outcome. Additionally, developmental differences including age, cognitive abilities,

social-emotional awareness, and language abilities are likely important moderators of treatment impact that should be empirically tested. The Agency for Healthcare Research and Quality has similarly called for research on moderators of trauma treatment impact as well as data on treatment implementation and fidelity to help inform efforts to tailor treatments to client need (Goldman Fraser et al. 2013).

Implications for clinical practice must be made cautiously from the current study findings, given the limits to internal and external validity. However, findings do lend some support to a treatment framework that integrates multiple theoretical approaches to treatment and customizes delivery of particular interventions within each approach based on individual client need (Lanktree et al. 2012). This approach is most commonly used in usual care, and has been endorsed by usual care clinicians treating traumatized children (Spinazzola et al. 2005), and thus it is encouraging to see positive outcomes, suggesting that this client-driven treatment approach warrants further investigation. There is a movement within the child mental health field towards components-based treatment approaches that provide a menu of proven therapeutic techniques for clinicians to select based on client needs (Chorpita and Daleiden 2009; Chorpita et al. 2005). This approach has great potential for use in usual care settings, as it allows for both the use of research-supported interventions as well as the flexible tailoring of treatment to client needs, and does not require clinicians to be trained and monitored in one specific treatment modality that may not be applicable to all of their clients (Barth et al. 2014).

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