A COMMUNITY-BASED STUDY OF THE EFFECTIVENESS OF TRAUMA-FOCUSED COGNITIVE BEHAVIOURAL THERAPY WITH SCHOOL-AGED CHILDREN IN TORONTO, CANADA

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Abstract

Trauma-Focused Cognitive Behavioral Therapy (TF-CBT) is a widely used treatment model for trauma-exposed children and adolescents (Cohen, Mannarino, & Deblinger, 2006). In this study, a randomized, waitlist-control design was used to evaluate the effectiveness of TF-CBT with a community sample of trauma-exposed school-aged children (Muller & Di Paolo, 2008). A total of 113 children referred for clinical services and their caregivers completed the Trauma Symptom Checklist for Children (Briere, 1996) and the Trauma Symptom Checklist for Young Children (Briere, 2005). Data were collected pre-waitlist, pre-assessment, pre-therapy, post-therapy, and six months following the end of therapy. Significant reductions in children's posttraumatic symptomatology from pre- to post-therapy support the effectiveness of TF-CBT in a diverse, Canadian metropolis. Clinical implications are discussed.

Keywords: Trauma, Children, Trauma-Focused Cognitive Behavioural Therapy, Posttraumatic Stress

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A Community-Based Study of the Effectiveness of Trauma-Focused Cognitive

Behavioural Therapy with School-Aged Children in Toronto, Canada

The American Psychiatric Association (2000) has identified a range of experiences

that may be traumatic for children including maltreatment, witnessing violence, serious

accident or injury, natural or man-made disaster, and exposure to war and/or conflict. A

traumatic event may induce terror and shock and may be sudden, and potentially

threatening to life, safety, or physical integrity (Cohen, Mannarino, & Deblinger, 2010).

The effects of the traumatic experience may be dependent on the type of trauma

experienced and the child's vulnerability and resilience (Cohen, Berliner, & Mannarino,

2003; Saywitz, Mannarino, Berliner, & Cohen, 2000). Child characteristics such as

temperament, neurodevelopmental reactivity, and attachment style, and the existence of

risk and protective factors including family functioning, caregiver mental health, and

access to treatment are also likely to influence how children cope in the aftermath of

trauma (Saywitz et al., 2000). It is important to note that different types of trauma can

have the same negative outcomes for children, while the same trauma can have variable

manifestations across children (Cicchetti & Cohen, 1995). Furthermore, traumatized

children may exhibit competence in certain domains (e.g., academic functioning) but not

others (e.g., social competence; Luthar, Cicchetti, & Becker, 2000). In 2009/2010,

Victim Services in Canada reported that children and youth were the largest specially

identified group in need of victim programs and so, optimizing clinical services provided

to this population is vital (Munch, 2012).

As noted, not all children are equally affected by trauma, and children's reactions to trauma may be heterogeneous. Nevertheless, there exists substantive research documenting the negative sequelae of trauma in children (Black, Woodworth, Tremblay, & Carpenter, 2012; Benoit, 2008; Cohen, Berliner, & Mannarino, 2003; Perry, 2002). Many children develop significant posttraumatic symptoms (PTS) without meeting the full criteria for posttraumatic stress disorder (PTSD; Cohen, Mannarino, & Deblinger, 2010). They may develop depression, anxiety, behavioural or physical disorders or hold distorted cognitions about themselves, others, and the world such as a diminished sense of safety or trust (Cohen, Mannarino, & Deblinger, 2010). Although, these children may engage in coping mechanisms in order to achieve a semblance of 'normality', such strategies are unlikely to be healthy or sustainable (Cicchetti & Cohen, 1995). For example, a child who has been exposed to maltreatment from an adult may form a neural template which signals to the child to be fearful of all adults (Perry, 2009). Although such a response may serve a protective function in a maltreating environment, it is not helpful across all contexts (McCrory et al, 2011). Furthermore, the longer a child continues on a maladaptive pathway the more difficult it becomes to return to a normal developmental trajectory (Cicchetti & Cohen, 1995). Consequently, the provision of timely and effective trauma-focused intervention is essential.

Trauma-Focused Cognitive Behavioral Therapy (TF-CBT)

TF-CBT is an evidence-based treatment for trauma-exposed children and adolescents (Cohen, Mannarino, & Deblinger, 2006). TF-CBT was developed based upon a number of randomized, controlled trials evaluating the efficacy of the model in decreasing

psychopathology in children following trauma-exposure (e.g., Cohen, Deblinger, Mannarino, & Steer, 2004; Cohen, Mannarino, & Knudsen, 2005; King et al., 2005). The efficacy of the treatment is supported by much empirical research, demonstrating the robustness of TF-CBT when compared to other treatment approaches including, nondirective supportive therapy (Cohen & Mannarino, 1996); supportive group therapy (Deblinger, Stauffer, & Steer, 2001); and child-centered therapy (Cohen, Deblinger, Mannarino, & Steer, 2004; Cohen & Mannarino, 1997). In addition, a study of TF-CBT in combination with a selective serotonin reuptake inhibitor compared to TF-CBT only, found no significant differences in treatment outcome (Cohen, Mannarino, Perel, & Staron, 2007). Follow-up studies of treatment at 6 and 12 months following therapy have found that post-therapy symptom reductions in child PTSD and shame and abuse-specific parental distress, were maintained (Deblinger, Mannarino, Cohen, & Steer, 2006). TF-CBT has been used in the treatment of multiple types of trauma such as terrorism (Cohen & Mannarino, 2008); natural disasters (Jaycox et al., 2010); and traumatic exposure in refugee youth (Murray, Cohen, Ellis, & Mannarino, 2008). Therapists from clinical (Feather & Ronan, 2009) and school settings (Little, Akin-Little, & Gutierriez, 2009) have successfully implemented the model with children ranging from preschool-aged to adolescence (Cohen & Mannarino, 1997; Cohen et al., 2006). Nevertheless, research on the effectiveness of TF-CBT has often been limited in terms of sample breadth, narrowing the generalizability of results. Specifically, many studies included only sexually abused children, did not occur in community-based settings, and were conducted by the model developers (Cohen, Deblinger, & Mannarino, 2005).

The TF-CBT model is based on the recognition that traumatized children present with a diverse set of emotional and behavioural difficulties (Cohen, Berliner, & Mannarino, 2000). Therefore, therapists are encouraged to use TF-CBT as a guide rather than a manual and may adapt the model to accommodate the needs of individual families. Literature citing the significant influence caregivers have on children's functioning is plentiful (Cole & Tan, 2007; Grusec & Davidov, 2010; Sameroff, 1995). As such, the inclusion of caregivers in treatment is believed to be an integral aspect of TF-CBT. Child and caregiver sessions are conducted in parallel so that learning can be reinforced by the caregiver at home. Caregiver sessions may also address the caregiver's own difficulties related to the trauma, or the experience of vicarious trauma as a result of the child's experience (Merchant, 2009). The TF-CBT model consists of components that are sequenced so that skills acquired earlier in therapy become the foundation for those taught in later stages. This type of phase-oriented treatment represents the gold standard in treatment for children and adolescents (DeVoe, 2009). Model components are organized into the acronym PRACTICE: Parenting skills, Psycho-education, Relaxation techniques, Affect expression and modulation, Cognitive processing, Trauma narrative, In vivo gradual exposure, Conjoint caregiver-child sessions, and Enhancing future safety and future development (see Method section for further details about the TF-CBT model). The overarching goals of treatment are to reduce posttraumatic symptoms, help the family understand the child's reaction to the trauma, and restore normal developmental functioning (Merchant, 2009).

The Current Study

The Healthy Coping Program (HCP) is a research collaboration between York University and nine child and family mental health centres spanning the Greater Toronto Area. The HCP was designed to evaluate the effectiveness of TF-CBT with trauma-exposed school-aged children (Muller & Di Paolo, 2008). Preliminary results from the research study have been published over the past several years. A chapter on the HCP presented a detailed case study to illustrate the use of TF-CBT in a local community agency (Muller, Padoin, & Lawford, 2008). TF-CBT was provided for a school-aged male who was experiencing difficulties such as nightmares and a fear of someone touching his back after he was sexually abused (Muller et al., 2008). Although it was often challenging for the child and caregiver to confront the traumatic experience, it is telling that six months following treatment, the therapist received a letter from the child indicating that "he was back to his normal self, had attended many sleepovers, and even confided in his teacher about the abuse," (Muller et al., 2008, p. 20). Additional preliminary studies on the HCP reported on the relationships between child emotion regulation, caregiver perceptions and expectations, and child psychopathology prior to treatment. Poor emotion understanding and emotion dysregulation in children were significantly related to overall PTS and internalizing behavior problems; however, only emotion dysregulation was significantly related to externalizing problems (Muller, Vascotto, Konanur, & Rosenkranz, 2013). Child emotion regulation was also identified as a mediator between caregiver perceptions and expectations of his/her child and child psychopathology (Muller, Vascotto, & Konanur, 2013).

This paper represents the first investigation of the treatment-outcome relationship for the HCP. The literature has identified several features of effective research on therapeutic intervention (Campbell & Stanley, 1963). First, such research endeavours to establish whether a relationship between treatment and outcome exists. The current study explores the treatment-outcome relationship by comparing child and caregiver ratings of children's PTS prior to TF-CBT to their ratings of children's PTS following TF-CBT. Effective intervention research should endeavor to include data from both the child and a caregiver (Briere, 2001). The present study builds upon prior research by examining children's experience of specific symptom clusters of PTS: re-experiencing (e.g., intrusive thoughts about the trauma); avoidance (e.g., persistent avoidance of thoughts, feelings, and reminders of the trauma); and arousal (e.g., difficulty concentrating; APA, 2000). Second, the extent to which the treatment-outcome relationship is representative across populations should be examined (Kazdin, 2008). Statistics Canada (2008) noted that, "Toronto's rich multicultural diversity is expressed by the more than 200 distinct ethnic origins residents identified" (p.1). Although there exists research demonstrating the success of TF-CBT with non-mainstream populations (De Arellano, 2005; Weiner, Schneider, & Lyons, 2009), the current study aims to extend the generalizability of the treatment-outcome relationship in Toronto, Canada. Finally, effective intervention research evaluates whether the specific intervention changed the targeted psychological construct by random assignment of research participants to a control or treatment condition (De Los Reyes & Kazdin, 2006). An intervention may be concluded to have changed the psychological construct if significant gains are observed with the treatment

condition (De Los Reyes & Kazdin, 2006). A waitlist-control condition was utilized in the HCP to this end.

Research Questions and Hypotheses

Research Question 1. Is TF-CBT effective in improving posttraumatic stress with a sample of school-aged children in Toronto, Canada?

Hypothesis 1a. It is expected that child ratings of children's PTS will significantly decrease following therapy provided by a variety of therapists from multiple community mental health centres spanning the Toronto area.

Rationale 1a. There is an abundance of research indicating the effectiveness of TF-CBT in improving children's PTS; however, the effectiveness of the model has yet to be investigated by a community-based study in an urban, diverse Canadian metropolis.

Hypothesis 1b. It is expected that caregiver ratings of children's PTS as measured by level of intrusive thoughts, avoidance, and arousal, will significantly decrease following therapy provided by a variety of therapists from multiple community mental health centres spanning the Toronto area.

Rationale 1b. Research has yet to explore changes in the PTS sub-clusters (i.e., intrusive thoughts, avoidance, and arousal) following TF-CBT.

Research Question 2. Is the passage of time alone effective in improving posttraumatic stress with a sample of school-aged children in Toronto, Canada.

Hypothesis 2a. It is expected that there will not be a significant change in children's PTS as reported by children and caregivers following a three month waiting list for clinical services.

Rationale 2a. The damaging effects of trauma are unlikely to resolve with the passage of time alone (Cicchetti & Cohen, 1995). Therefore, it is unlikely that children will experience symptomatic improvement while on the waitlist for assessment and therapy.

Hypothesis 2b. It is expected that any significant decreases observed in children's PTS at post-therapy will be maintained at six month follow-up.

Rationale 2b. Treatment gains made by children as a result of TF-CBT are likely to be observed six months following the completion of TF-CBT (Deblinger, Mannarino, Cohen, & Steer, 2006).

Method

Data for this thesis were collected from March of 2006 to March of 2012, through the Healthy Coping Program (Muller & DiPaolo, 2008). The research study received funding from the Provincial Centre of Excellence for Child and Youth Mental Health at the Children's Hospital of Eastern Ontario (Muller & DiPaolo, 2008). Additional funding was obtained from the Hedge Funds Care Canada Foundation. Ethics approval was received from the Office of Research Ethics at York University, and each of the following participating children's mental health agencies: Aisling Discoveries Child and Family Centre, Boost Child Abuse Prevention and Intervention, Child Development Institute, COSTI Family and Mental Health Services, The Etobicoke Children's Centre,

The Hincks-Dellcrest Treatment Centre (Sheppard Site), The Hincks-Dellcrest Treatment Centre (Jarvis Site), Yorktown Child and Family Centre, and Peel Children's Centre. Participant information is provided for children and caregivers who completed at least one data collection with the HCP.

Procedure

Recruitment. Families referred for clinical services to Boost Child Abuse Prevention and Intervention (formerly Toronto Child Abuse Centre) and Peel Children's Centre (PCC) were assessed for study inclusion. Both agencies are non-profit organizations in the Toronto area offering trauma assessment and therapy for children and families. Verification of the referral trauma was obtained through reports provided by the local Children's Aid Society (CAS) or police services. Referrals to Boost and PCC were made by a range of sources including CAS, police services, other child mental health centres, school staff, victim witness assistance program, family physician, and in some cases families self-referred for clinical services. An initial meeting with an assessor/therapist from Boost or PCC and a researcher from York University with a non-offending caregiver was conducted at the agency. The purpose of the meeting was to inform the caregiver about the assessment and treatment process; verify that the child and caregiver met the eligibility criteria of the research study; and to describe The Healthy Coping Program.

Eligibility. Families were invited to participate in the HCP only if the following conditions were met: 1. The child was 7 to 12 years of age at the time of treatment; 2. The child had experienced a verified traumatic event (e.g., abuse, community violence,

home invasion); 3. A non-offending caregiver(s) was willing and able to participate in assessment and TF-CBT; 4. The child and/or caregiver(s) did not have an active substance abuse problem or psychotic disorder that interfered with functioning; 5. The child was not actively suicidal; 6. The child did not have a documented developmental disorder (e.g., autism); 7. The child and/or caregiver(s) were on a stable regimen if they were taking any psychotropic medications and; 8. The child had not received prior treatment for the referral trauma. Participation in clinical services and the research study was voluntary. Caregivers provided written informed consent and participating children provided written assent. In compensation for research participation, families were offered an opportunity to bypass the waitlist at the treatment agency; monetary compensation ($20 to $30 per data collection); and transportation tickets. Families who declined participation (n = 31) were still offered clinical services.

Assessment. TF-CBT was preceded by an assessment of the child and caregiver at Boost or PCC. The purpose of the assessment was to formulate specific recommendations to inform treatment. Assessments consisted of individual meeting with both the child and caregiver and were completed for 96 children. The mean length of the assessment was 3 to 4 sessions in the format of semi-structured clinical interviews. Detailed behavioural descriptive questions, activities, drawings, and questionnaires were used to collect information about the child's victimization experiences, reactions of significant others, and the effect of the trauma on the child's functioning and well-being. This information was captured in a scrapbook. Caregiver interviews and questionnaires queried family background information, developmental history, concerns about the child,

relational dynamics in the family, other stressful experiences in the family, the strengths of the child and family, cultural considerations, information about the disclosure in the case of maltreatment, and how the child and family were coping following the traumatic event(s). A feedback session was held with the assessor, TF-CBT therapist, caregiver(s) in order to share the assessment report and explain the treatment rationale. There were also instances in which children attended the feedback. This was a subjective determination made by the therapist and caregiver(s) and whether they believed it would be beneficial for the child to be present. Further information about this decision-making process was not obtained by the researchers.

TF-CBT. Individual therapy sessions with the child and caregiver occur in parallel so that caregivers are able to help their child practice the skills learned in therapy that week. A total of 57 children and caregivers completed TF-CBT and the mean treatment length was between 17 to 18 sessions. *Parenting skills* such as the use of praise, selective attention, and time-outs, are taught throughout treatment to improve child-caregiver interactions. *Psychoeducation* involves dispelling commonly held myths about trauma (e.g., family is alone in their experience) and normalizing the child and/or caregiver's response to the trauma. *Relaxation* helps the child reduce trauma-related psychophysiological symptoms (e.g., increased heart rate, muscle tension, shallow breathing). *Affective expression and modulation* focuses on feeling identification and emotion regulation techniques including positive imagery and self-talk. *Cognitive coping and processing* involves identifying problematic automatic thoughts (e.g., "The abuse was my fault") and replacing them with alternative healthy thoughts. The child provides

a detailed account (e.g., written story, cartoon, play) of his/her traumatic experience in the form of the *trauma narrative*. The therapist supports the child during this component by helping him/her to apply the cognitive and affective coping skills acquired earlier in therapy as the child remembers painful trauma-related thoughts. Cognitive distortions the child may have about his/her responsibility for the trauma can also be addressed. The therapist uses the caregiver sessions to prepare the caregiver to respond appropriately to potentially shocking and/or difficult information contained in the child's trauma narrative. *In vivo mastery of trauma reminders* involves reducing fears of innocuous trauma cues through gradual exposure of the child to the trauma reminders and cues in a safe setting and the use of relaxation techniques. *Conjoint parent-child sessions* allow the child to share the trauma narrative with his/her caregiver and discuss the knowledge and skills they have learned in therapy. *Enhancing future safety and development* to enhances the child's personal safety skills (e.g., recognizing danger, saying "no", confiding in a trustworthy adult).

Model Fidelity. All therapists had read "Treating Trauma and Traumatic Grief in Children and Adolescents" (Cohen, Mannarino, & Deblinger, 2006) and completed TF-CBT web-based training. Attendance at monthly clinical consultation meetings, moderated by a TF-CBT trainer over the course of the research study, provided therapists with an opportunity to share case concerns and solicit peer and expert consultation. Therapists completed a TF-CBT model adherence checklists for each research case which specified the time the therapist spent on model components at each therapy session with the child and caregiver. Review of the model adherence checklists by researchers and

monthly small-group supervision of therapists to reinforce TF-CBT skills by clinical supervisors well versed in TF-CBT at the treatment agencies, were used to ensure fidelity to the TF-CBT model.

Data Collection. The measures used in the current study were administered as part of a larger battery of psychometric measures which queried participants' thoughts and feelings related to the traumatic experience. Children and caregivers typically required approximately two hours in order to complete all the measures. Following recruitment, participants were randomly assigned to either a non-waitlist group or waitlist control group. Non-waitlist participants completed measures pre-assessment, post-assessment/pre-therapy, post-therapy, and six months after therapy had ended. Participants in the waitlist control group completed a pre-waitlist data collection, waited for three months without receiving any clinical services, and then followed the same data collection procedure as the non-waitlist participants.

Measures

Trauma Information Scale (TIS). The TIS was developed for the HCP to document children's trauma history and was based on the integration of items and categories derived from existing measures (Barnett, Manly, & Cicchetti, 1993; Cohen, 1998; Finkelhor, Hamby, Ormrod, & Turner, 2005; Higgins & McCabe, 2001; Straus, Hamby, Finkelhor, Moore, & Runyan, 1998; Walsh, Jamieson, MacMillan, & Trocmé, 2004; Wolfe & McGee, 1991). The scale was completed by therapists based on information gathered at intake and assessment. Sexual abuse items ranged from disrobing and touching to oral genital contact and penetration. Physical abuse items ranged from the

child being slapped or hit with an object to use of a weapon (e.g. knife or gun) on the

child. Witnessing domestic violence included verbal (e.g., "Swearing, insulting, or name

calling") and physical (e.g., "Kicking or hitting with a fist") aggression observed between

adults in the home and/or witnessing the assault of another child in the home by an adult.

Psychological abuse included such incidents as the child being ridiculed or belittled and

the child being told they were a burden and unwanted by a caregiver. Neglect referred to

a lack of appropriate shelter, food, clothing, attention, and supervision by a caregiver.

Other traumatic events (e.g., divorce/separations) were also queried.

Trauma Symptom Checklist for Children (TSCC). The TSCC (Briere, 1996) is a

54 item self-report designed to assess trauma-related symptoms among children (ages 8-

16) who have been exposed to traumatic life events. The TSCC was standardized on

large clinical and nonclinical groups (Briere, 1996). Children rate how often they

experience symptoms on a 4-point Likert scale (1 = *never* and 4 = *almost all of the time*).

The TSCC yields scores for the following six main clinical scales: Anger (ANG),

Anxiety (ANX), Depression (DEP), Dissociation (DIS), Posttraumatic Stress (PTS), and

Sexual Concerns (SC). *T* scores are used to interpret the child's level of symptomatology

and are standardized transformations of the raw scores ($M = 50$, $SD = 10$). For all clinical

scales except SC, *T* scores at or above 65 are considered clinically significant. *T* scores

in the range of 60 through 65 are suggestive of difficulty and may represent subclinical

(but significant) symptomatology. The current study used the PTS scale to assess

children's symptomatology. Two response-distortion scales indicate whether a child is

under or over-responding to an invalid degree. The clinical scales have been found to

have high internal consistency reliability and good validity. Internal consistency reliability coefficients are strong for five of the clinical scales, ranging from 0.80 to 0.89 but are slightly lower for the sexual concerns subscale which had alphas ranging from 0.67 to 0.78. Symptom reductions as measured by the TSCC following trauma therapy have been reported (Cohen, Mannarino, & Knudsen, 2005; Lanktree & Briere, 1995; Nolan et al., 2002).

Trauma Symptom Checklist for Young Children (TSCYC). The TSCYC (Briere, 2005) is a 90 item caregiver-report which assesses trauma related symptomatology of children between the ages of 3 and 12 years. Caregivers rate the frequency with which the child exhibits each symptom over the course of the previous month, on a 4-point Likert scale (1 = *not at all* and 4 = *very often*). Eight clinical scales are assessed, including: Anger/Aggression (ANG); Anxiety (ANX); Depression (DEP); Dissociation (DIS); Posttraumatic Stress-Intrusion (PTS-In); Posttraumatic Stress-Avoidance (PTS-Av); Posttraumatic Stress-Arousal (PTS-Ar); Posttraumatic Stress-Total (PTS-TOT); and Sexual Concerns (SC). The current study measured the caregivers' perception of children's PTS using the PTS-In, PTS-Av, and PTS-Ar subscales. *T* scores less than or equal to 64 are "normal"; *T* scores between 65 and 69 are deemed potentially problematic ("mild-moderate"); and *T* scores greater than or equal to 70 are interpreted as clinically significant ("severe"). To address intentional or inadvertent misreporting by caregiver, two validity scales assess the potential of the caregiver to over-report (Atypical Response) and under-report (Response Level) the child's symptoms. The instrument has good reliability, with alphas ranging from .81 to .91, and two-week test-retest reliabilities

ranging from .68 to .96. Higher TSCYC scores in abuse samples compared with nonabuse samples demonstrates the validity of the measure.

Sample

Children. Of the 113 children who completed at least one data collection in the HCP, 80 were female and 33 were male. The children's ages ranged from 6 years, 10 months to 12 years, 10 months (M = 10 years, 0 months, SD = 1 year, 8 months). Children's ethnic background consisted of European-Canadian (39.3%), African/Caribbean-Canadian (17.9%), Asian Canadian (11.6%), Latin American-Canadian (10.7%), South Asian Canadian (6.3%), Aboriginal (1.8%), and Other (e.g., Middle Eastern; 12.5%). The predominant type of trauma for which children were referred was sexual abuse (75.2%), however, children were also referred for physical abuse, witnessing domestic violence, traumatic grief, home invasion, and bullying/assault by peers. A significant proportion of the children (74.3%) had experienced multiple types of trauma including exposure to other types of maltreatment (e.g., neglect), war and/or conflict, and divorces/separations.

Caregivers. Non-offending caregivers totaled 98 and consisted of 87 females and 11 males. Caregivers ranged in age from 25 years to 72 years (M = 37.30, SD = 8.21). There were eight caregivers who had multiple children involved in the HCP. In these sibling cases, the caregiver participated in all components of treatment for each child, however, did not always opt to complete psychometrics for all of his/her children due to time constraints. The relationship of the caregiver to the child was primarily identified as biological mother (82.6%), but in some instances, a foster parent, biological father,

adoptive father, stepfather, or guardian participated in research and treatment. Marital status of the caregivers consisted of single (33.0%), married (29.1%), divorced (12.6%), common-law relationship (11.7%), widowed (1.9%), or other (11.7%; e.g., separated). The highest level of education reported by caregivers included: "completed/some high school or less" (19.6%), "trades certificate/diploma" (7.8%), "completed/some university/college" (51.0%), and "graduate school or professional training" (3.9%). Annual household income in Canadian dollars before taxes ranged from "below $10,000" (10.1%), "$10,000 to $14,999" (14.1%), "$15,000 to $19,999" (13.1%), "$20,000 to $29,999" (14.1%), "$30,000 to $39,999" (1.0%), "$40,000 to $49,999" (13.1%), "$50,000 to $59,999" (11.1%), and "$60,000 or more" (23.2%). The Poverty Line for a single adult working full-time (35 hrs/wk) is $19, 719 (Poverty Free Ontario, 2013).

Perpetrators. Limited demographic information about the perpetrator(s) in each research case was obtained from measures completed by the clinician who completed the assessment with the child and caregiver. Perpetrators were overwhelmingly known to the child victim (92.0%), male (96.5%), and adults (80.5%). They were identified as family friend (31.0%), biological father (24.8%), relative (15.9%), stranger (5.3%), sibling (4.4%), peer (3.5%), biological mother (2.7%), stepfather (2.7%), school staff (2.7%), or multiple perpetrators (7.0%). The length of time between children's traumatic experience and their referral to clinical services was variable: 0-3 months (18.6%), 4-6 months (24.8%), 7-9 months (8.0%), 10-12 months (9.7%), more than 12 months (29.2%), and an unknown length of time (9.7%).

Therapists. Of the 34 therapists who participated in the HCP, 33 were female and 1 was male. Therapist ranged in age from 24 to 57 years ($M = 34.18$ years, $SD = 7.32$). The highest level of education completed by therapists included a master's degree (75.8%), partial doctoral degree (12.1%), partial master's degree (6.1%), undergraduate university degree (3%), and college diploma (3%). Education and training backgrounds consisted of social work (60.6%), psychology (24.3%), art therapy (6.1%), psychoanalytic child therapy (3%), marriage and family therapy (3%), and child and youth care (3%). Therapists' had varying levels of clinical experience with trauma-exposed children, from less than 1 year to 27 years. The theoretical orientations identified by therapists included CBT, psychoanalytic/psychodynamic, client-centred/nondirective, solution-focused, narrative, family systems, ecological, and eclectic.

Results

Data were screened prior to examining the main hypotheses based on guidelines outlined by Tabachnick and Fidell (2007). The accuracy with which data were entered was evaluated by comparing entered and re-entered data files. Discrepancies between the files, representing missing and/or incorrect values, were identified and corrected.

Exclusions, Missing Data, and Withdrawals

Families referred for clinical services were excluded prior to research participation if they did not meet the study eligibility criteria. Subsequent exclusion from the HCP occurred for several reasons. Participants were excluded prior to therapy if the assessor determined that an alternative intervention approach was needed (e.g., the child was to be

re-located to a treatment residence). Participants were excluded following therapy if there were concerns around model fidelity in a particular case. Finally, participants were excluded during the six month period following TF-CBT if the child and/or caregiver continued to receive clinical services outside the purview of the HCP during that time. Figure 1 provides sample sizes, exclusions, and withdrawals at each time point in the HCP.

Missing data occurred for several reasons. First, the child did not complete the outcome measure (e.g., he/she became distressed and the data collection was terminated). Second, the caregiver did not complete the outcome measure (e.g., the caregiver completed measures for only one of the siblings participating in the HCP). Third, the family withdrew from the HCP. Withdrawal from the HCP was typically a consequence of a family opting out of clinical services (n = 36) rather than exclusively from the research study (n = 11). Withdrawal from clinical services typically occurred because the caregiver and/or child were uninterested in pursuing treatment or the family moved from the agency catchment area. Withdrawal from the HCP was most often because the family was too busy to complete the research measures in addition to completing TF-CBT.

The retention rate for clinical services (68.1%) was lower than the retention rate for the research study (88.5%). The pattern of when families withdrew was dependent on withdrawal type (i.e., clinical services vs. research study). A comparison of these groups revealed that families who withdrew from clinical services were most likely to do so following the pre-assessment data collection, either before they began the assessment or

at some point during the assessment. In contrast, withdrawals from the research study peaked following the post-therapy data collection i.e., during the six months following TF-CBT. Figure 2 compares the number of withdrawals from clinical services and consequently the research study (i.e., clinical services retention rate) to the number of withdrawals solely from the research study (i.e., research retention rate).

Statistical Approach and Evaluation of Statistical Assumptions

The current study utilized a linear mixed model one-way analysis of variance (ANOVA) for repeated measures for statistical analyses. The within-subject factor was time (i.e., pre-waitlist, pre-assessment, pre-therapy, post-therapy, and six month follow-up). The four repeated measures of the dependent variable were children's self-report of PTS and caregivers' report of children's PTS-In, PTS-Av, and PTS-Ar. The mixed model approach is advantageous in its applicability with research design having unequal variances; the ability to specify the covariance matrix based on how data were collected; and the inclusion of participants having incomplete data in the research sample (Gueorguieva & Krystal, 2004). Although this may yield unequal sample sizes at different time points, the use of all available data in statistical analyses enables a better estimate of the outcome variables and increases statistical power when the sample size is small (Howell, 2010). The most appropriate covariance structure for this model was determined using Akaike's Information Criteria (AIC). Several covariance matrices were compared including compound symmetric (i.e., assumption of equal variances and covariances), autoregressive (i.e., assumption of larger covariance among points closer in time), and unstructured (i.e., no assumptions about the pattern of variance and

covariance; Howell, 2010). The lowest AIC value was observed using a first-order autoregressive covariance matrix which is consistent with the methodology used in the current study. For example, the length of time between the completion of pre- and post-therapy measures was always less than the length of time between the completion of pre-therapy and six month follow-up measures.

Normality was initially assessed by visual inspection of histograms of each outcome variable superimposed with a normal curve. Overall, nonnormality of both child and caregiver outcome variables progressively increased from pre-waitlist to follow-up. This is consistent with a decrease in PTS ratings for the majority of participants across time points (and small or no reductions in symptomatology in a minority of participants). Figure 3 presents frequency histograms of participant data collected pre-waitlist, pre-assessment, pre-therapy, post-therapy, and six months following treatment. Logarithmic transformations are recommended for positively skewed data (Tabachnick & Fidell, 2007). However, a logarithmic transformation on the current data did not normalize the distributions of the outcome variables. Hence, untransformed data was utilized for statistical analyses. Howell (2010) noted that an analysis of variance (ANOVA) is a robust statistical procedure and its assumptions can frequently be violated with relatively minor effects, especially for the normality assumption.

Outlier analyses were conducted in order to assess the influence of extreme values. A 10% trimmed sample was created for each outcome variable at each time point (i.e., the highest and lowest 5% of scores were excluded). The trimmed means were not very

different from original means. Hence, no cases were excluded and all data were retained for statistical analyses.

Mean differences in children's PTS, between data collection time points, were utilized as a measure of effect size. Wilkonson et al. (1999) suggested that when the units of measurement are meaningful on a practical level, such as mean differences, then the use of this unstandardized measure is preferred over a standardized measure (r or d).

Reliability and Correlation Analyses

The internal consistency of each outcome variable at each time point was examined using Cronbach alpha coefficients. Alpha reliabilities were acceptable for all outcome variables across all times, ranging from .81 to .88 for the TSCC and .69 to .88 for the TSCYC. Table 1 provides alpha reliabilities for child and caregiver reports of children's PTS by time point.

Correlation matrices were created to examine the bivariate relationships between child and caregiver reports of children's PTS at each time point (see Tables 2). Significant correlations were observed between caregivers' reports of PTS-Intrusion, PTS-Avoidance, and PTS-Arousal at each time point. For example, at pre-waitlist, PTS-In was positively related to both PTS-Av ($r(28) = .53, p = .004$) and PTS-Arousal ($r(28) = .53, p = .004$), and PTS-Av was positively related to PTS-Ar ($r(28) = .38, p = .049$). These significant positive correlations were found to increase across time points. Correlational analyses of child and caregiver reports of children's PTS yielded different results. Child self-ratings were significantly positively associated with caregiver ratings of PTS-intrusion at pre-waitlist ($r(28) = .38, p = .047$), pre-assessment ($r(95) = .29 , p =$

.005), and pre-therapy ($r(66) = .28, p = .021$). There was also a significant, positive relationship between children's self-report of PTS and caregivers' report of children's PTS-arousal at pre-waitlist ($r(28) = .43, p = .022$). No significant correlations between child and caregiver reports were observed at post-therapy or follow-up.

Research Question 1: Is TF-CBT effective in improving posttraumatic stress with a sample of school-aged children in Toronto, Canada?

Children's Self-Reported PTS. It was expected that decreases in child and caregiver ratings of children's PTS would be observed following TF-CBT and that treatment gains would be maintained at six month follow-up. A linear mixed model one-way ANOVA for repeated measures was conducted on pre-waitlist, pre-assessment, pre-therapy, post-therapy, and six month follow-up data. An overall significant decrease in children's self-reported PTS was found across all of the time points at which data were collected [$F(4, 221) = 4.64, p = .001$]. Table 3 presents the means, standard deviations, and samples of child self-ratings of PTS at pre-waitlist, pre-assessment, pre-therapy, post-therapy, and six months following therapy. Pairwise comparisons with Bonferroni correction for familywise error qualified the significant effect observed. Significant decreases in children's self-report of PTS were found from pre-assessment to post-therapy, and pre-assessment to six month follow-up. Table 4 presents pairwise comparisons, mean differences, significance values for mean differences, and 95% confidence intervals for the mean differences. Also noteworthy were the clinically significant changes as indicated by T scores. For the child self-report (i.e., TSCC), $T \geq 65$ indicates that children's symptoms are clinically significant. T scores in the range of 60 to 65 are

suggestive of difficulty. Finally, $T < 60$ indicates normal functioning. Although children did not report that their symptoms were in the clinically problematic range (i.e., $T \geq 60$) prior to assessment or therapy, their T scores were observed to progressively decrease from pre-assessment ($T = 53$) to pre-therapy ($T = 51$) to post-therapy ($T = 47$) to six months following TF-CBT ($T = 47$).

Caregivers' Report of Children's PTS-Intrusion. Caregivers' ratings of children's intrusive thoughts were hypothesized to decrease across the time points at which data was collected. As expected, caregivers reported an overall significant decrease in children's PTS-In from pre-waitlist to six month follow-up [$F(4, 197) = 4.83, p = .001$]. Table 5 presents the means, standard deviations, and samples of caregiver ratings of children's PTS-In at pre-waitlist, pre-assessment, pre-therapy, post-therapy, and six months following therapy. These results were qualified by post hoc analyses. Caregivers reported a significant reduction in children's intrusive thoughts from pre-assessment to post-therapy and from pre-assessment to six month follow-up. Table 6 presents pairwise comparisons, mean differences, significance values for mean differences, and 95% confidence intervals for the mean differences, for PTS-In. For the caregiver report (i.e., TSCYC), $T \geq 65$ indicates that children's symptoms are clinically problematic, whereas, $T \leq 64$ indicates normal functioning. At pre-assessment, caregivers reported children's PTS-In to be within the clinically problematic range ($T = 65$). These ratings were reported to be in the range of normal functioning following the assessment at pre-therapy ($T = 61$). Children's PTS-In continued to decrease at post-therapy ($T = 57$) and during the six months following therapy ($T = 55$).

Caregivers' Report of PTS-Avoidance. As expected, an overall significant decrease in children's avoidance symptoms, as reported by caregivers, was found across the time points at which data were collected [$F(4, 199) = 2.69, p = .032$]. Table 7 presents the means, standard deviations, and samples of caregiver ratings of children's PTS-Av at pre-waitlist, pre-assessment, pre-therapy, post-therapy, and six months following therapy. Pairwise comparisons with Bonferroni correction for familywise error qualified the significant effect observed. Caregivers rated children's PTS-Av to be significantly reduced from pre-assessment to six month follow-up. The reduction in children's PTS-Av from pre-assessment to post-therapy was non-significant. Table 8 presents pairwise comparisons, mean differences, significance values for mean differences, and 95% confidence intervals for the mean differences for caregivers' ratings of children's avoidance symptomatology at pre-waitlist, pre-assessment pre-therapy, post-therapy, and six months following treatment. Children's avoidance symptoms were reported to be at clinically problematic levels at both pre-assessment ($T = 69$) and pre-therapy ($T = 67$). Children's avoidance symptoms were reported to be in the range of normal functioning at post-therapy ($T = 63$) and continued to decrease during the six months following TF-CBT ($T = 60$).

Caregivers' Report of PTS-Arousal. For arousal symptoms, an overall significant decrease was found across the time points at which data was collected [$F(4, 189) = 5.50, p = .000$]. Table 9 presents the means, standard deviations, and samples of caregiver ratings of children's PTS-Ar at pre-waitlist, pre-assessment, pre-therapy, post-therapy, and six months following therapy. Pairwise comparisons with Bonferroni correction

qualified the significant effect. Significant decreases in caregivers' ratings of children's PTS-Ar were observed from pre-assessment to post-therapy; pre-therapy to post-therapy; and from pre-therapy to six month follow-up. Table 10 presents pairwise comparisons, mean differences, significance values for mean differences, and 95% confidence intervals for the mean differences, for PTS-arousal at pre-waitlist, pre-assessment, pre-therapy, post-therapy, and six months following therapy. Caregivers did not report children's arousal symptoms to be in the clinically problematic range at pre-assessment ($T = 58$) or at pre-therapy ($T = 59$). However, ratings of children's arousal symptoms were significantly reduced at post-therapy ($T = 53$) and this decrease was maintained at six month follow-up ($T = 53$).

Research Question 2: Is the passage of time alone effective in improving posttraumatic stress with a sample of school-aged children in Toronto, Canada?

It was expected that the passage of time alone would not result in significant changes of child and caregiver reports of children's PTS. This question was examined using data from participants who had experienced the passaged the time in the absence of clinical services. The HCP included two time periods during which families did not receive clinical services. Children randomized to a waitlist-control group were recruited into the study, waiting for three months, completed a pre-assessment data collection, and began clinical services (i.e., assessment and treatment). The pre-assessment data obtained from this group is an assessment of children's PTS following the passage of time (i.e., three months). The second time period occurred during the six months following therapy. Six month follow-up data is an assessment of children's PTS following the passage of time

(i.e., six months), as well. It was hypothesized that there would be no change in children's PTS during the three month wait for clinical services. As expected, previous analyses found no significant changes in children's self-reported PTS from pre-waitlist to pre-assessment (i.e., during the three month waiting list). Changes in caregivers' ratings of children's PTS-In, PTS-Av, and PTS-Ar were non-significant during this time period.

It was also expected that there would not be a significant change in children's PTS from post-therapy to six month follow-up. Treatment gains (i.e., significant reductions in children's PTS) observed at post-therapy were expected to be maintained six months following the end of therapy. The results of previous analyses support this hypothesis. Noteworthy is the difference between the mean scores of children's PTS during these time periods. Following the three month waiting list children reported significantly greater levels of PTS ($M = 52.88$) than six months following the termination of TF-CBT ($M = 46.75$). Similarly, caregivers' ratings following the three month waiting list of children's PTS-In ($M = 65.01$), PTS-Av ($M = 68.64$), and PTS-Ar ($M = 57.78$) were significantly greater than ratings of PTS-In ($M = 54.78$), PTS-Av ($M = 60.23$), and PTS-Ar ($M = 52.89$) at six month follow-up. Supplementary analyses were conducted to exclude demographic differences between the two samples as a potential explanation for the reduction in children's PTS. A comparison of key demographic variables of the child samples (Table 11) and caregiver samples (Table 12) found no substantive differences between the groups. The distinction between the post-waitlist/pre-assessment sample and the follow-up sample was that the former had not yet received clinical services, whereas the latter had completed assessment and TF-CBT.

The waitlist-control group was not compared to the treatment group to evaluate the effect of TF-CBT on children's PTS. The community agencies participating in the HCP preceded treatment with a period of assessment. The baseline data collected for participants randomized to the waitlist-control group represented PTS levels of children who had not had any clinical services. In contrast, for the treatment group, pre-therapy data did not represent a baseline because these children had completed a substantial assessment during which they had started to discuss their traumatic experiences before pre-therapy data was collected. Baseline data for the treatment group were the data collected pre-assessment. However, if this data were used as a baseline it would be difficult to attribute whether observed changes in children's PTS at post-therapy were due to TF-CBT, or a combination of assessment and therapy.

Discussion

Prior research on the effectiveness of TF-CBT had largely been conducted with sexually abused children accessing services in non-community based settings in the United States. One of the goals of the current study, the Healthy Coping Project, was to evaluate the effectiveness of TF-CBT in a Canadian metropolis with unique demographics. An ongoing element of clinical care is the assessment of clients' functioning in order to evaluate treatment effectiveness (Briere, 2001). Although TF-CBT is an evidence-based practice, the current study endeavoured to extend the generalizability of its effectiveness in reducing children's PTS by studying heterogeneous samples of children, caregivers, and therapists. Although the majority of children sampled were ultimately referred for abuse (specifically sexual abuse), referral trauma

was not limited to maltreatment experiences. The ethnic diversity of the children is representative of the pluralism of the population under study. Caregivers varied with respect to marital status, educational background, and annual income. Therapists varied in age, educational background, level of clinical experience, and theoretical orientation. The variability in the demographic characteristics of the child, caregiver, and therapist community samples represents strengths of the HCP, and contributes to the ecological validity of the research findings.

The treatment-outcome relationship was evaluated by comparing PTS ratings from pre-assessment and pre-therapy to post-therapy using child and caregiver reports. Children reported significant reductions in PTS from pre-assessment to post-therapy. The improvement in symptomatology observed at post-therapy was maintained at six month follow-up. Caregivers' ratings of children's intrusive thought significantly decreased from pre-assessment to post-therapy and from pre-assessment to six month follow-up. Avoidance symptoms were reported to significantly diminish from pre-assessment to six month follow-up. Significant decreases in caregivers' report of arousal symptoms were observed from pre-assessment to post-therapy; pre-therapy to post-therapy; and from pre-therapy to six month follow-up. Overall, findings of the HCP suggest that children's PTS significantly improved following TF-CBT.

Perhaps even more striking was the finding that both children and caregivers reported *continued* symptomatic improvement during the six month period following TF-CBT. These results are consistent with a recent systematic review of the use of TF-CBT with children and youth , which found that significant reductions in PTSD symptoms

following TF-CBT treatment and at twelve month follow-up (Cary & McMillen, 2012). Shedler (2010) noted that psychological well-being "is not merely the absence of symptoms; it is the positive presence of inner capacities and resources". Although changes in children's PTS were non-significant at six month follow-up, this finding suggests that children successfully consolidated and integrated the skills they learned during treatment into their daily lives.

Significant reductions in children's PTS were primarily observed from pre-assessment to post-therapy and follow-up. These findings suggest that symptomatic improvement begins during the assessment phase itself. There are several reasons that may explain this finding. First, the act of initiating clinical services may have resulted in symptomatic improvement. It is possible that children and caregivers' hope that treatment will help to diminish unhealthy thoughts, feelings, and behaviours had a positive impact in and of itself. Second, there exists a degree of overlap between the assessment process and the content covered by the TF-CBT model. The assessment process involved a degree of psychoeducation about trauma and normalizing of the child and caregivers' responses to the traumatic event. Also, interviews with the child and caregiver about the trauma represent gradual exposure to the trauma, a core aspect of the TF-CBT model.

Although there was symptomatic improvement in children's self-report of PTS, PTS-In, and PTS-Av over the course of the assessment, these reductions were not statistically significant. This suggests that an assessment may not be sufficient to restore healthy functioning in children, however, it may represents a good starting point. Similar results were not found with caregivers' ratings of children's arousal symptoms, which were

increased nonsignificantly from pre- to post-assessment. Perhaps because caregivers did not report children's arousal symptoms to be as problematic as their ratings of children's PTS-intrusion and PTS-avoidance, the extent to which arousal symptoms could be observed to improve during assessment was limited. Alternatively, perhaps the process of speaking about the traumatic event(s) triggered children's arousal symptoms resulting in little change in these ratings following the assessment. Lanktree and Briere (1995) suggested that temporary increases in trauma symptoms may be a result of the activating aspects of re-exposure to traumatic memories or a by-product of a treatment-induced reduction in avoidance. Therefore, it appears as though the combination of assessment and TF-CBT, rather than each phase on its own, was effective in alleviating children's PTS.

The effect of the passage of time was explored by comparing children's PTS following a three month waiting list prior to treatment, to their PTS levels following a six month time period, after they had completed treatment. Both children and caregivers reported non-significant changes in children's PTS during the three months on a waiting list. In fact, following the three month wait for clinical services, children's PTS levels were reported by caregivers to have remained in the clinically problematic range. The implication of this is especially distressing given that for the majority of children (71.7%), considerably more time than three months had elapsed since the traumatic exposure. Thus, in spite of the passage of time, children were suffering with elevated levels of symptomatology following their traumatic experiences in the absence of clinical services.

In contrast, child and caregiver ratings of children's PTS at six months following TF-CBT suggest a very different story. Following treatment, children reported significantly lower levels of PTS and caregivers reported that their children's intrusive thoughts, avoidance, and arousal symptoms were significantly lower than pre-assessment levels. Moreover, children's PTS, as reported by caregivers, decreased from clinically problematic levels to levels that were within a healthy range. A comparison of the demographic characteristics of the post-waitlist/pre-assessment and six month follow-up samples found no substantial differences with respect to age, gender, ethnic background, referral trauma, marital status, education, and annual income. This supports the idea that the difference between these groups was that one group had yet to complete assessment and treatment (i.e., post-waitlist/pre-assessment sample), whereas the other had completed both assessment and treatment (i.e., six month follow-up sample). Hence, the reduction in children's PTS levels observed at six months following TF-CBT, was likely an indicator of the effectiveness of assessment and therapy, rather than solely the simple passage of time.

An evaluation of the bivariate relationship between child and caregiver reports of children's PTS yielded interesting findings. Children and caregivers were significantly more concordant in their ratings of PTS when completing measures at pre-waitlist, pre-assessment, and pre-therapy. In contrast, significant associations between caregiver and children's PTS ratings were not observed at post-therapy and six month follow-up. Specifically, caregivers' ratings of children's PTS were higher than children's self-ratings. These findings may appear counterintuitive given that a key element of TF-CBT

is to improve child-caregiver communication. However, a discrepancy in caregiver and children's ratings is likely not indicative of whether or not an improvement in the relationship between a child and his/her caregiver occurred. Indeed, discordance in child and caregivers reports of children's trauma is well documented (Ackerman, Newton, McPherson, Jones, & Dykman, 1998; Briere & Elliott, 1997). An alternative explanation is that when children are very symptomatic, as was the case prior to therapy, their problematic thoughts, feelings, and behaviours are more evident and therefore easier to rate. As children move forward in the treatment process, symptomatic improvement results in less variability in the outcome variables. A decrease in variability of children's PTS levels result in a decreased likelihood of observing significant associations between variables.

Another finding of the current study was the change in the normality of the distributions of outcome variables across time points. Early on, the distributions of children's self-report of PTS and caregivers' report of PTS-intrusion, PTS-avoidance, and PTS-arousal approximated a normal distribution to the greater extent than at post-therapy and six month follow-up. Positively skewed distributions following therapy represent that for the majority of children, TF-CBT was effective in reducing posttraumatic symptomatology. In the future, clinical researchers may be interested in examining changes in the normality of the distributions of outcome variables as an indicator of change from pre- to post-treatment.

Clinical Implications

The findings of the current study have the potential to offer considerable clinical utility. The results support the effectiveness of TF-CBT in reducing PTS in school-aged children who have experienced trauma. Specifically, both children and caregivers reported that significant decreases in posttraumatic symptomatology following TF-CBT. Furthermore, these gains were observed to have been maintained six months after therapy had ended. The heterogeneity inherent in the child, caregiver, and therapist samples highlights that TF-CBT may be successfully applied with diverse populations and by therapists with varying clinical experience and theoretical orientations. The notion that the passage of time alone is sufficient to heal children's clinical pathology was debunked. Children's PTS did not significantly change during the three month waiting list for services. However, significant reductions in children's PTS were observed during the passage of time following therapy.

The lengthy wait times for clinical services faced by trauma-exposed children, and their families, is disheartening. The inability of clinicians to provide these children with expedient treatment because of a lack of capacity represents a societal failure to protect our most vulnerable at time when they are *most in need of support*. On a policy level, a government that prioritizes child welfare needs to re-evaluate the allocation of funds to treatment provision for children who have experienced trauma. This is especially true for families accessing free services at community agencies due to financial limitations. Alternatively, coverage of psychological services by the provincial healthcare plan

should be provided for minors. In any case, the results of the current study emphasize the imperative of providing both effective and timely treatment for traumatized children.

The finding that children's symptomatology began to diminish during the assessment itself (prior to TF-CBT) may be attributed to the introduction of several TF-CBT components during this initial phase (e.g., psychoeducation, gradual exposure to the trauma). This finding suggests that families on a waiting list for clinical services are likely to benefit from an intervention targeting these therapeutic components. Perhaps monthly or bi-monthly group sessions for these families may start the process of healing children's posttraumatic symptoms. Alternatively, families may be given written materials during this time. Anecodotal comments from HCP therapists revealed that the provision of tangible research results demonstrating the effectiveness of TF-CBT in their own city would support efforts to engage families in treatment. Additionally, it can be difficult for practitioners to assess whether the services they are providing to families are having the desired effect of reducing children's symptomatology. It may be even more challenging to know whether observed therapeutic gains continued to have a lasting effect following treatment cessation. The findings of the HCP reinforced the efforts made by therapists to this end and validated the sustainable positive impact of TF-CBT. In addition, a brochure explaining TF-CBT and the key findings of the current study was created by the HCP researchers and will be disseminated by participating community agencies to families for trauma treatment.

Another interesting finding was that withdrawal from clinical services was most frequent prior to the start of the assessment or during the assessment process. Avoidance

is often rooted in families' fear that revisiting the traumatic experience will result in children's symptoms becoming worse. Perhaps the prospect of opening up, or actually starting to describe the trauma as part of the assessment, may be a deterrent. As a result, terminating clinical services seems less consequential for these families. In contrast, as families became increasingly engaged in the therapeutic process, they were less likely to withdraw from clinical services. Attempts to identify families who are avoidant early on may minimize disengagement from treatment. Withdrawal from clinical services was also attributable to several practical barriers faced by families. Participants anecdotally reported that transportation to clinical agencies, children having to miss school to attend sessions, and caregivers' inflexible employment schedules, made it difficult to commit to treatment. These families may benefit from agencies willing to provide select components of TF-CBT in an evening group session.

Finally, an indirect benefit of the HCP was the development of a community of practice across the Toronto area. Therapists involved in the research study met regularly over many years to obtain clinical consultation on TF-CBT research cases. Peer consultation allowed less experienced therapists to benefit from the expertise of more experienced therapists. It also enabled the exchange of ideas. For example, therapists often shared unique ways of completing the trauma narrative such as creating an art project or using a software program to create a comic book. The HCP also supported case consultation from model experts. The promotion of city-wide opportunities for TF-CBT training increased the capacity of children's mental health centres to offer an evidence-based practice to trauma-exposed children. Similar findings were recently

found when TF-CBT was delivered to children having posttraumatic symptoms as a result of exposure to domestic violence (Puccia et al., 2012). The authors stated that the implementation of the model in response to domestic violence was optimized when the inclusion of all community agencies receiving such referrals, was maximized.

Limitations and Future Directions

There are a number of limitations of the current study that are noteworthy. First, a small sample size at pre-waitlist, post-therapy, and follow-up may have reduced the ability to detect statistically significant differences in children's PTS. Second, querying the immigration status, degrees of acculturation, and English proficiency may have revealed the potential influence of these factors on treatment effectiveness. It is likely that therapists' caseloads include clients having a range of clinical presentations and symptom severity (McAleavey, Nordberg, Kraus, & Castonguay, 2012). As such, a focus on heterogeneity of clinical research samples used in the study of TF-CBT effectiveness will inform its application with diverse populations.

A third limitation of the HCP was a de-emphasis on the formal collection of qualitative data. Although psychometrics are recommended for the assessment of treatment effectiveness (Briere, 2001), the use of a formal method for gathering qualitative data may have provided unique insights unable to be captured by quantitative methods. For example, treatment effectiveness may also be measured by an evaluation of social or behavioural outcomes such as improvements in peer relationships at school (Briere, 2001). These types of outcomes may be more difficult to quantify (Briere, 2001). Furthermore, coordination of the research study involved frequent contact with families

and therapists. This contact often led to candid conversations about their respective experiences with the TF-CBT model such as coping with challenging caregivers.

A fourth study limitation was that researchers were only able to gain minimal information about the reasons for participant withdrawal. Future studies may afford greater emphasis to evaluating those aspects of assessment and treatment that families and therapists did *not* find helpful. In the HCP, these insights were often gleaned in informal ways (e.g., at clinical consultation meetings). For instance, during a clinical consultation meeting, one clinician remarked that she found it challenging to implement the cognitive component of the TF-CBT model with her seven year old client due to his developmental stage. A recent study on the utilization and implementation of TF-CBT with maltreated children found that only two thirds of therapists using the model completed all of the components in practice (Allen & Johnson, 2012). Deblinger, Mannarino, Cohen, Runyon, & Steer (2011) found that irrespective of the number of treatment sessions (i.e., eight versus sixteen), or the inclusion of the trauma narrative component, TF-CBT was effective in improving children's symptomatology.

Finally, future studies may benefit from exploring the potential influence of other variables (e.g., therapeutic alliance) on the effectiveness of TF-CBT in reducing children's posttraumatic symptomatology. A recent review of TF-CBT research found that therapeutic gains related to the reduction of posttraumatic symptoms were maintained one year following therapy, however, similar findings were not observed for depression or behaviour problems (Cary & McMillen, 2012). Research on the

effectiveness of TF-CBT in alleviating alternative symptom domains may offer insight

into these findings.

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Table 1

Alpha Reliabilities of Child Self-Report of PTS and Caregiver Report of PTS-In, PTS-Av, and PTS-Ar by Time Point

	Pre-waitlist	Pre-assessment	Pre-therapy	Post-therapy	Follow-up
	α	α	α	α	α
PTS	.81	.86	.88	.81	.88
PTS-In	.81	.88	.85	.85	.85
PTS-Av	.69	.79	.80	.81	.85
PTS-Ar	.83	.75	.78	.83	.79

Table 2

Bivariate Correlations of Child Self-Report of PTS and Caregiver Report of PTS-In, PTS-Av, and PTS-Ar by Time Point

		Pre-waitlist		
	PTS	PTS-In	PTS-Av	PTS-Ar
PTS	-	.38*	-.02	.43*
PTS-In		-	.53**	.53*
PTS-Av			-	.38*
PTS-Ar				-
		Pre-assessment		
	PTS	PTS-In	PTS-Av	PTS-Ar
PTS	-	.29**	.19	.18
PTS-In		-	.67**	.56**
PTS-Av			-	.45**
PTS-Ar				-
		Pre-therapy		
	PTS	PTS-In	PTS-Av	PTS-Ar
PTS	-	.28*	-.08	.17
PTS-In		-	.69**	.64**
PTS-Av			-	.43**
PTS-Ar				-
		Post-therapy		
	PTS	PTS-In	PTS-Av	PTS-Ar
PTS	-	.07	.15	.20
PTS-In		-	.76**	.52**
PTS-Av			-	.56**
PTS-Ar				-
		Follow-up		
	PTS	PTS-In	PTS-Av	PTS-Ar
PTS	-	.25	.16	.22
PTS-In		-	.90**	.79**
PTS-Av			-	.74**
PTS-Ar				-

Note: $*p < .05$, $** p < .001$

Table 3

Means, Standard Deviations, and Sample Sizes of Child Self-Report of PTS by Time
Point

	Pre-waitlist	Pre-assessment	Pre-therapy	Post-therapy	Follow-up
M	55.93	52.88	50.55	47.32	46.75
SD	12.14	12.02	12.32	9.17	11.39
N	30	105	76	56	43

Table 4

Pairwise Comparisons of Child Self-Report of PTS by Time Point

		MD	df	p	95% CI for MD Lower Bound	Upper Bound
Pre-waitlist	Pre-assessment	3.05	263	1.00	-2.39	8.49
	Pre-therapy	5.38	283	.128	-.70	11.46
	Post-therapy	8.62*	300	.003	2.01	15.22
	Follow-up	9.18*	305	.003	2.09	16.28
Pre-assessment	Pre-waitlist	-3.05	263	1.000	-8.49	2.39
	Pre-therapy	2.33	205	.617	-1.91	5.85
	Post-therapy	5.57*	283	.008	.91	10.23
	Follow-up	6.13*	305	.016	.68	11.59
Pre-therapy	Pre-waitlist	-5.34	283	.128	-11.46	.70
	Pre-assessment	-2.33	205	.617	-5.85	1.19
	Post-therapy	3.24	200	.253	-.84	7.31
	Follow-up	3.80	278	.441	-1.52	9.13
Post-therapy	Pre-waitlist	-8.62*	305	.003	-15.22	-2.01
	Pre-assessment	-5.57*	305	.008	-10.23	-.91
	Pre-therapy	-3.24*	278	.253	-7.31	.84
	Follow-up	.57	195	1.000	-4.08	5.21
Follow-up	Pre-waitlist	-9.18*	305	.003	-16.28	-2.09
	Pre-assessment	-6.13*	305	.016	-11.59	-.68
	Pre-therapy	-3.80*	278	.441	-9.13	1.52
	Post-therapy	-.58	195	1.000	-5.21	4.08

Note: *$p < .05$. Bonferroni procedure utilized to adjust for multiple comparisons.

Table 5

Means, Standard Deviations, and Sample Sizes of Caregiver Report of PTS-Intrusion by Time Point

	Pre-waitlist	Pre-assessment	Pre-therapy	Post-therapy	Follow-up
M	69.28	65.01	61.40	57.14	54.78
SD	15.01	19.49	16.46	16.33	16.33
N	28	95	67	51	40

Table 6

Pairwise Comparisons of Caregiver Report of PTS-Intrusion by Time Point

					95% CI for MD	
		MD	*df*	*p*	*Lower Bound*	*Upper Bound*
Pre-waitlist	Pre-assessment	4.27	232	1.000	-3.51	12.05
	Pre-therapy	7.88	245	.115	-.88	16.64
	Post-therapy	12.14*	264	.004	2.54	21.75
	Follow-up	14.51*	274	.001	4.10	24.91
Pre-assessment	Pre-waitlist	-4.27	232	1.000	-12.05	3.51
	Pre-therapy	3.61	183	.403	-1.36	8.57
	Post-therapy	7.87*	244	.011	1.28	14.62
	Follow-up	10.23*	273	.004	2.21	18.26
Pre-therapy	Pre-waitlist	-7.88	245	.115	-16.64	.88
	Pre-assessment	-3.61	183	.403	-8.57	1.36
	Post-therapy	4.26	184	.372	-1.51	10.04
	Follow-up	6.63	241	.149	-1.03	14.29
Post-therapy	Pre-waitlist	-12.14*	264	.004	-21.75	-2.54
	Pre-assessment	-7.87*	244	.011	-14.62	-1.13
	Pre-therapy	-4.26	184	.372	-10.04	1.51
	Follow-up	2.36	177	1.000	-4.03	8.75
Follow-up	Pre-waitlist	-14.51*	274	.001	-24.91	-4.10
	Pre-assessment	-10.24	273	.004	-18.26	-2.21
	Pre-therapy	-6.63	241	.149	-14.29	1.03
	Post-therapy	-2.36	177	1.000	-8.75	4.03

Note: $*p < .05$. *Bonferroni procedure utilized to adjust for multiple comparisons.*

Table 7

Means, Standard Deviations, and Samples Sizes of Caregiver Report of PTS-Avoidance by Time Point

	Pre-waitlist	Pre-assessment	Pre-therapy	Post-therapy	Follow-up
M	71.41	68.64	67.01	62.89	60.23
SD	13.30	18.50	18.83	16.80	18.34
N	28	95	67	51	40

Table 8

Pairwise Comparisons of Caregiver Report of PTS-Avoidance by Time Point

					95% CI for MD	
		MD	df	p	Lower Bound	Upper Bound
Pre-waitlist	Pre-assessment	2.77	236	1.000	-5.44	10.97
	Pre-therapy	4.40	250	1.000	-4.82	13.61
	Post-therapy	8.52	267	.173	-1.54	18.58
	Follow-up	11.18*	275	.039	.32	22.03
Pre-assessment	Pre-waitlist	-2.77	236	1.000	-10.97	5.44
	Pre-therapy	1.63	184	1.000	-3.66	6.92
	Post-therapy	5.75	249	.225	-1.35	12.85
	Follow-up	8.41*	275	.048	.04	16.79
Pre-therapy	Pre-waitlist	-4.40	250	1.000	-13.61	4.82
	Pre-assessment	-1.63	184	1.000	-6.92	3.66
	Post-therapy	4.12	185	.582	-2.02	10.27
	Follow-up	6.78	245	.180	-1.29	14.85
Post-therapy	Pre-waitlist	-8.52	267	.173	-18.58	1.54
	Pre-assessment	-5.75	249	.225	-12.85	1.35
	Pre-therapy	-4.12	185	.582	-10.27	2.02
	Follow-up	2.66	177	1.000	-4.16	9.48
Follow-up	Pre-waitlist	11.18*	275	.039	-22.03	-.324
	Pre-assessment	-8.41*	275	.048	-16.79	-.037
	Pre-therapy	-6.78	245	.180	-14.85	1.29
	Post-therapy	-2.66	177	1.000	-9.47	4.16

Note: *p < .05. Bonferroni procedure utilized to adjust for multiple comparisons.

Table 9

Mean, Standard Deviation, and Sample Size of Caregiver Report of PTS-Arousal by Time Point

	Pre-waitlist	Pre-assessment	Pre-therapy	Post-therapy	Follow-up
M	61.97	57.78	58.45	52.90	52.89
SD	14.53	11.68	12.87	11.03	10.61
N	28	95	67	51	40

Table 10

Pairwise Comparisons of Caregiver Report of PTS-Arousal by Time Point

		MD	df	p	95% CI for MD	
					Lower Bound	Upper Bound
Pre-waitlist	Pre-assessment	4.19	227	.321	-1.32	9.71
	Pre-therapy	3.52	241	1.000	-2.69	9.73
	Post-therapy	9.08*	261	.002	2.27	15.89
	Follow-up	9.08*	274	.006	1.70	16.46
Pre-assessment	Pre-waitlist	-4.19	227	.321	-9.71	1.32
	Pre-therapy	-.67	175	1.000	-4.19	2.84
	Post-therapy	4.88*	240	.041	.10	9.66
	Follow-up	4.89	273	.158	-.81	10.58
Pre-therapy	Pre-waitlist	-3.52	241	1.000	-9.73	2.69
	Pre-assessment	.67	175	1.000	-2.84	4.19
	Post-therapy	5.56*	176	.002	1.47	9.64
	Follow-up	5.56*	237	.041	.13	10.99
Post-therapy	Pre-waitlist	-9.08*	241	.002	-15.89	-2.27
	Pre-assessment	-4.88*	175	.041	-9.66	-.10
	Pre-therapy	-5.56*	176	.002	-9.64	-1.47
	Follow-up	.00	168	1.000	-4.52	4.53
Follow-up	Pre-waitlist	-9.08*	274	.006	-16.46	-1.70
	Pre-assessment	-4.89	273	.158	-10.58	.81
	Pre-therapy	-5.56*	237	.041	-10.99	-.13
	Post-therapy	-.00	168	1.000	-4.53	4.52

Note: * $p < .05$. Bonferroni procedure utilized to adjust for multiple comparisons.

Table 11

A Comparison of the Demographic Characteristics of Child Samples at Post-waitlist/Pre-assessment and Six Month Follow-up

Demographic Variable	Post-waitlist/Pre-assessment	Follow-up
Gender	68.9%	74.5%
Female	31.1%	25.5%
Male		
Age	$M = 9.6$ years	$M = 9.3$ years
Ethnic Background	39.6%	40.4%
European-Canadian	17.0%	17.0%
African/Caribbean-Canadian	10.4%	8.5%
Latin American-Canadian	12.3%	6.4%
Asian Canadian	5.7%	10.6%
South Asian Canadian	1.9%	0.0%
Aboriginal	13.2%	17.0%
Other		
Referral Trauma	74.5%	74.5%
Sexual abuse	11.3%	10.6%
Physical abuse	7.5%	2.1%
Witnessed domestic violence	2.8%	4.3%
Traumatic grief	2.8%	6.4%
Home invasion	0.9%	2.1%
Bullying/assault by peers		

Note: This table is based upon post-waitlist/pre-assessment sample size (n=105) and follow-up sample size (n=43).

Table 12

A Comparison of the Demographic Characteristics of Caregiver Samples at Post-waitlist/Pre-assessment and Six Month Follow-up

Demographic Variable	Post-waitlist/Pre-assessment	Follow-up
Gender		
Female	89.6%	89.4%
Male	10.4%	10.6%
Age	37.0 years	36.2 years
Marital Status		
Single	29.5%	23.5%
Married	29.5%	40.4%
Divorced	13.2%	4.3%
Common law relationship	12.3%	12.8%
Widowed	1.9%	4.3%
Other	13.2%	14.9%
Highest Level of Education		
Graduate school/professional training	3.8%	2.1%
Completed/some university/college	49.0%	48.9%
Trades certificate/diploma	8.7%	6.4%
Completed/some high school or less	38.4%	42.5%
Annual Household Income		
Below $10,000	8.9%	4.3%
$10,000 to $14,999	16.8%	21.7%
$15,000 to $19,999	13.9%	21.7%
$20,000 to $29,999	13.9%	4.3%
$30,000 to $39,999	1.0%	2.2%
$40,000 to $49,999	11.9%	10.9%
$50,000 to $59,999	10.9%	6.5%
$60,000 or more	22.8%	28.3%

Note: This table is based upon post-waitlist/pre-assessment sample size (n = 95) and follow-up sample size (n = 40).

Figure 1

Sample Sizes, Exclusions, and Withdrawals

```
┌──────────────────────────────────┐        ┌──────────────────────────────────┐
│  Boost Referrals (n=129)         │        │  PCC Referrals (n=30)            │
│  - 10 cases excluded after referral│      │  - 5 cases excluded after referral│
│  - 21 cases declined research     │        │  - 10 cases declined research    │
└──────────────────────────────────┘        └──────────────────────────────────┘
                 │                                            │
                 ▼                                            ▼
┌──────────────────────────────────┐        ┌──────────────────────────────────┐
│  Research Participants (n=98)    │        │  Research Participants (n=15)    │
└──────────────────────────────────┘        └──────────────────────────────────┘
                 │                                            │
        ☆  ┌──────────────────┐                              │
           │ Random Assignment│                              │
           └──────────────────┘                              │
            ┌───────────┴──────────────┐                     │
            ▼                          ▼                     │
  ┌──────────────────┐       ┌──────────────────┐            │
  │  Waitlist Group  │       │ Nonwaitlist Group│◄───────────┘
  └──────────────────┘       └──────────────────┘
            │                          │
            ▼                          ▼
┌──────────────────────────────┐   ┌──────────────────────────────────────────┐
│ Pre-waitlist Child Report (n=30)│ │ Pre-assessment Child Report (n=105)      │
│ Pre-waitlist Caregiver Report (n=28)│ │ Pre-assessment Caregiver Report (n=95)│
│ - 4 cases withdrew after data collection│ │ - 3 cases excluded after data collection│
│ - 1 case excluded after data collection │ │ - 25 cases withdrew after data collection│
└──────────────────────────────┘   └──────────────────────────────────────────┘
            │                                    │
            ▼                                    ▼
  ┌──────────────────────────┐          ┌──────────────┐
  │ 3 Month Wait (No Services)│─────────│  Assessment  │
  └──────────────────────────┘          └──────────────┘
                                               │
┌────────────────────────────────┐            ▼
│ Random assignment to the Waitlist│  ┌──────────────────────────────────────┐
│ Control and Nonwaitlist Groups  │  │ Pre-therapy Child Report (n=76)      │
│ occurred from Mar/06 to Aug/08. │  │ Pre-therapy Caregiver Report (n=67)  │
│ The termination of the 3 month  │ ☆│ - 9 cases excluded after data collection│
│ waiting list resulted in the    │  │ - 13 cases withdrew after data collection│
│ recruitment of Boost research   │  └──────────────────────────────────────┘
│ participants into the Nonwaitlist│            │
│ Group only.                     │            ▼
└────────────────────────────────┘      ┌──────────────┐
                                         │   TF-CBT     │
                                         └──────────────┘
                                               │
                                               ▼
                                   ┌──────────────────────────────────────┐
                                   │ Post-therapy Child Report (n=56)     │
                                   │ Post-therapy Caregiver Report (n=51) │
                                   │ - 2 cases excluded after data collection│
                                   │ - 6 cases withdrew after data collection│
                                   └──────────────────────────────────────┘
                                               │
                                               ▼
                                   ┌──────────────────────────────────────┐
                                   │ Follow-up Child Report (n=43)        │
                                   │ Follow-up Caregiver Report (n=40)    │
                                   └──────────────────────────────────────┘
```
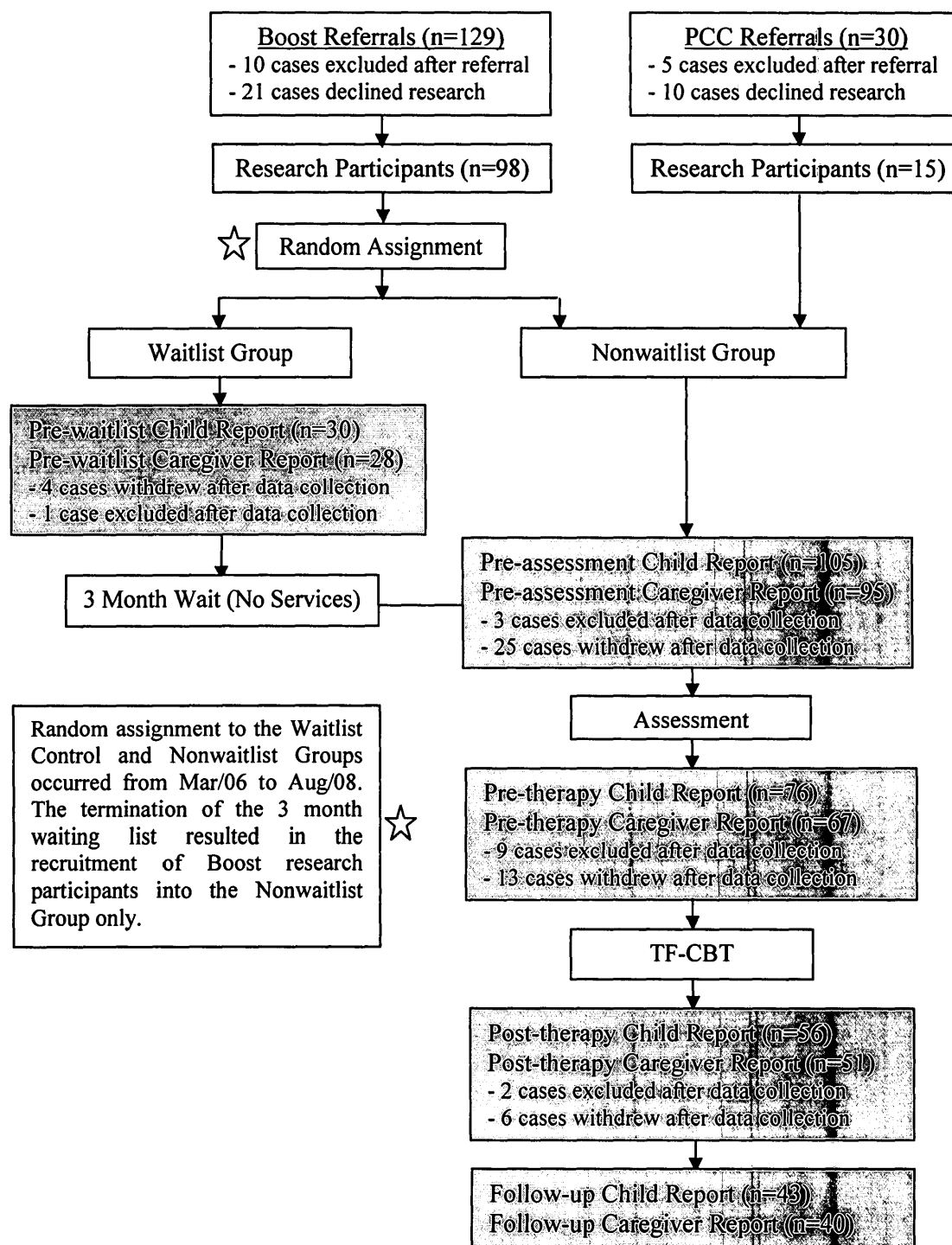
Figure 2

A Comparison of Clinical Services Retention Rate and Research Retention Rate
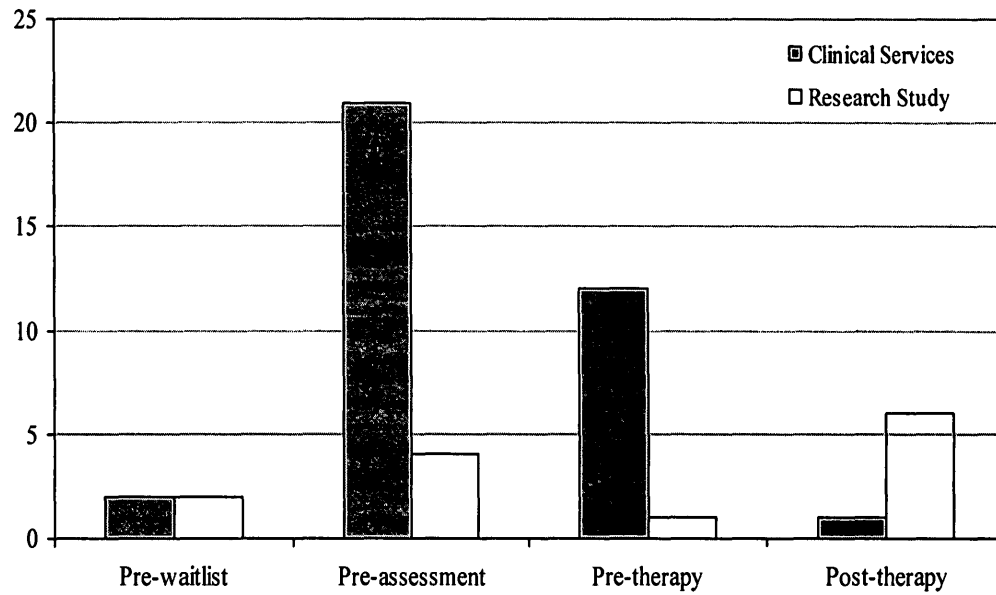
Figure 3

Frequency Histograms Exploring the Normality of Child Self-Report of PTS and
Caregiver Report of PTS-In, PTS-Av, and PTS-Ar by Time Point

	Pre-waitlist	Pre-assessment	Pre-therapy	Post-therapy	Follow-up
PTS					
PTS-In					
PTS-Av					
PTS-Ar					