Journal of Traumatic Stress, Vol. 23, No. 6, December 2010, pp. 699–707 (© 2010) CE ARTICLE

Implementation of CBT for Youth Affected by the World Trade Center Disaster: Matching Need to Treatment Intensity and Reducing Trauma Symptoms

CATS Consortium

An implementation study of cognitive–behavioral therapies (CBT) was conducted for traumatized youth in a postdisaster context. Headed by the New York State Office of Mental Health, the study targeted youth ($N = 306$) ages 5–21 affected by the World Trade Center disaster. They received either trauma-specific CBT or brief CBT skills depending upon the severity of trauma symptoms. Clinicians were trained to deliver these interventions and received monthly consultation. A regression discontinuity design was used to assess optimal strategies for matching need to service intensity. At 6-months postbaseline, both groups had improved. Rate of change was similar despite differences in severity of need. The implications for the implementation of evidence-based treatments postdisaster are discussed.

Over the past decade, the focus of scientific questions about clinical services increasingly includes an examination of how to embed interventions into routine practice (Burns & Hoagwood, 2004; Hoagwood & Burns, 2005). Although empirically derived practices are being promoted vigorously across states and local provider communities, the scientific knowledge base to guide implementation or dissemination of these practices is limited (Schoenwald & Hoagwood, 2001). Therefore, an immediate challenge facing policy-makers and administrators attempting to incorporate evidence-based treatments into routine practice settings is that the processes required to appropriately fit, sequence, and structure evidence-based treatments into real-world settings are almost entirely unexamined (Bickman, 1996; Hoagwood, Burns, Kiser, Ringeisen, & Schoenwald, 2001). In addition, scientific guidelines to assist large-scale dissemination efforts do not exist (McHugh & Barlow, 2010). Yet these issues are among the most pressing for closing the gap between research and clinical practice (Weisz, Sandler, Durlak, & Anton, 2005) and improving the quality of mental health services for children and families (Burns & Hoagwood, 2004; Hoagwood & Burns, 2005).

In this article, we describe a large mental health services implementation study of trauma treatments for children and adolescents affected by the World Trade Center (WTC) terrorist attack in New York City on September 11, 2001. The challenges facing implementation of this project were considerable and have been described in other articles (CATS Consortium, 2007; Hoagwood et al., 2007). The purpose of this article is to describe (a) 6-month outcomes associated with receipt of varying intensities of cognitive–behavioral therapies (CBT) among 306 youth aged 5–21 who were exposed to the WTC event, and (b) the

This paper is dedicated to Sandra Kaplan, MD (9/14/41–7/23/10).

The CATS Consortium was a collaborative group created by the New York State Office of Mental Health in 2003 to provide mental health treatment services to youth and families affected by the World Trade Center Disaster and to evaluate the delivery model. The New York State collaborators were Kimberly Eaton Hoagwood, PhD, Chip Felton, MSW, Sheila Donahue, MS, Anita Appel, MSW, James Rodriguez, PhD, Laura Murray, PhD, David Fernandez, MA, Joanna Legerski, BS, Michelle Chung, BA, Jacob Gisis, BS, Jennifer Sawaya, BA, Jamie Weaver, MPH, Sudha Mehta, MPH, Jessica Mass Levitt, PhD, Marleen Radigan, DrPH, Jameson Foster, MPH. The principal investigators and coinvestigators from nine participating sites were Robert Abramovitz, MD (Jewish Board on Family and Child Services), Reese Abright, MD (St. Vincent's Hospital), Peter D'Amico (North Shore/Long Island Jewish), Giussepe Constantino, PhD (Lutheran Hospital), Carrie Epstein, CSWR (Safe Horizon), Jennifer Havens, MD (Columbia University Babies Hospital), Sandra Kaplan, MD (North Shore/Long Island Jewish), Jeffrey Newcorn, MD (Mt. Sinai School of Medicine), Moises Perez, PhD (Alianza Dominicana), Raul Silva, MD (New York University/Bellevue), Heike Thiel de Bocanegra, PhD (Safe Horizon), Juliet Vogel, PhD (North Shore/Long Island Jewish).

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The corresponding author would also like to especially thank Sue Marcus, Naihua Duan, Jamie Weaver, Mary Cavaleri, Serene Olin, Jennifer Wisdom, and Amanda Moy for their invaluable help and insights.

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 DOI: 10.1002/jts.20594

clinical and policy implications relative to the implementation of evidence-based treatments for youth in postdisaster situations.

One obstacle to implementation studies of this kind is the scarcity of empirically tested child or adolescent treatments for disaster-related trauma combined with the absence of a scientific base on dissemination strategies. Although CBT for anxiety disorders has been well validated (Albano, Krain, Podniesinski, & Ditkowsky, 2004; Kendall & Treadwell, 1996; Silverman et al., 2008), and has been applied to children who have suffered sexual abuse or other traumas (Cohen, Mannarino, & Deblinger, 2001; Deblinger, Lippman & Steer, 1996), no studies have specifically evaluated youth traumatized as a result of exposure to terrorist events. Furthermore, training and consultation methods that are effective for disseminating therapies to broad populations have not been subject to rigorous examination. In the absence of an efficacy base on treatments for youth in postdisaster situations and a science base on implementation strategies, providers in postdisaster circumstances have to either create their own "home grown" interventions or adapt successful interventions for populations experiencing qualitatively different forms of trauma. This was the situation in 2001 when New York State and its service agencies recognized the need to respond quickly and effectively to the needs of traumatized youth.

To ensure provision of effective interventions for distressed youth, the Child and Adolescent Trauma Treatments and Services Consortium (hereafter called the CATS Consortium) was formed by the New York State Office of Mental Health to oversee, manage, and coordinate treatment services. Here we describe the results of a study using a naturalistic and innovative need-based assignment design called *regression discontinuity* to assess strategies for matching the intensity of treatment services to the level of need in a postdisaster condition with limited resources. We also describe the use of the regression discontinuity design to assign youth with differing levels of trauma severity to either trauma-specific CBT or brief CBT skills, and examine reductions in trauma symptoms over 6 months.

METHOD

Participants

The CATS Consortium was created after the WTC attack to address the need for treatment among the most highly affected children and adolescents and is the largest youth mental health service and evaluation study associated with the WTC event. The CATS Consortium was established with the twin aims of (a) delivering evidence-based trauma-focused treatments and services to affected youth in New York City, and (b) studying the implementation processes and outcomes associated with delivery of these treatments. Through a competitive grant process, nine provider organizations spanning 45 sites were eventually selected by the New York State Office of Mental Health to adopt a common cross-site assessment and treatment protocol for traumatized youth. The recruitment, outreach, and engagement methods for sample selection have been described previously (CATS Consortium, 2007; Hoagwood et al., 2007; Rodriguez, Hoagwood, & McKay, in press). In this study, we compare evidence-based trauma treatment received by youth with moderate to severe trauma symptoms with a brief CBT skills intervention that was provided to youth with mild trauma symptoms; we exclude youth with mild trauma symptoms who received treatment as usual.

For the trauma-specific CBT condition targeted to youth with moderate to severe trauma symptoms, the CATS Consortium chose two age-specific treatments. These treatments met selection criteria, including being (a) developmentally appropriate for the targeted age range (ages 5–21), (b) clinically indicated for children and youth exposed to trauma and disaster, (c) manualized, and (d) showing evidence of clinical and functional improvement in experimental studies. For children aged 5—12, the trauma-specific CBT was the *Child and Parent Trauma-Focused Cognitive Behavioral Therapy Treatment Manual* (TF-CBT; Cohen et al., 2006). Prior studies by Cohen and associates (Cohen & Mannarino, 1996; Cohen, Deblinger, Mannarino & Steer, 2004) have found TF-CBT to be effective in decreasing trauma and externalizing symptoms in sexually abused children (Deblinger et al., 1996; Deblinger, McLeer, & Henry, 1990) and significant decreases in emotional and behavioral symptoms have been maintained at 12- and 24-month follow-up assessments (Cohen & Mannarino, 1996, 1998; Deblinger, Lippmann & Steer, 1999).

For adolescents (ages 13–21) the trauma-specific CBT was the trauma and grief component therapy for adolescents (Layne, Saltzman, Pynoos, & Steinberg, 2002; Saltzman, Layne, Steinberg, & Pynoos, 2006). This intervention, developed by members of the UCLA Trauma Psychiatry Service, was implemented in Armenia following the 1988 earthquake (Goenjian et al., 1997), in Southern California with junior high and high school students exposed to community violence (Layne et al., 2001; Saltzman, Pynoos, Layne, Steinberg, & Aisenberg, 2001), and in Bosnia with war-exposed secondary school students (Layne et al., 2001). Collectively, trauma and grief component therapy for adolescents has been found to lead to significant reductions in posttraumatic, depression, and traumatic grief symptoms, and improvements in school performance. Both TF-CBT and trauma and grief component therapy for adolescents (collectively referred to hereafter as trauma-specific CBT) include common components (psychoeducation, cognitive restructuring, problem-solving, homework, gradual exposure, etc.). Participants on average received 8–12 sessions. See Table 1.

Trauma-specific CBT was compared to a brief CBT skills intervention targeted to youth with mild trauma symptoms. This latter skills intervention was created as part of the Project Liberty initiative (Essock et al., 2007) for youth with mild trauma symptoms and it consisted of a four-session cognitive–behavioral intervention that targeted a range of different problem areas and that excluded

Table 1. Components of Brief Cognitive–Behavioral Therapy (CBT) Skills Versus Trauma-Specific CBT

Brief CBT skills	Trauma-specific CBT
Manualized 4 sessions	Manualized 12–20 sessions
Psychoeducation	Psychoeducation
Affect regulation	
	Parent skill building
Stress management and relaxation	Stress inoculation training: The elements include feeling identifications, relaxation training, thought stopping, cognitive coping, affect regulation
Cognitive skills development to defeat negative thinking	Cognitive processing:
	Cognitive triangle
	Cognitive restructuring
Parent involvement	Creating trauma narrative
4 Brief CBT skills:	Processing the traumatic experience
Posttraumatic stress and grief intervention—CBT techniques include psychoeducation, cognitive work, skills building, and enhancement of coping skills.	This was used in family sessions with younger children only.
Anxiety intervention—Psychoeducation, cognitive work, exposure with reinforcement, and relapse prevention. It includes adjunctive strategies (relaxation and breathing retraining, parent training, anxiety management, social skills training).	A core component of the trauma-specific CBT is use of the "trauma narrative," whereby children and youth are guided through their trauma experience to create a type of narrative or visual representation.
Depression intervention—This relies on a CB framework that emphasizes affective psychoeducation, coping and problem solving skills training, cognitive restructuring, and parent and teacher training.	
Disruptive behavior intervention—This uses techniques such as attending to children's behavior, positive reinforcement, family problem solving and communication skills.	

grief-focused specialized interventions. The training of therapists in this condition was derived from the skills components of the TF-CBT and UCLA's trauma grief components treatment. See Table 1 for a comparison of the components of trauma-specific CBT and brief CBT skills conditions. Both treatment conditions were provided by the same therapists.

The sample was drawn from naturally occurring referrals to real-world agencies in New York City: 1,764 children and youth were referred to the CATS project, and 1,387 were screened. Seven-hundred four were eligible for the study based on both documented exposure to the WTC and having mild to severe trauma symptoms as determined by the Posttraumatic Stress Disorder Reaction Index (hereafter called PTSD Reaction Index; Steinberg et al., 2004). See below for measure descriptions. Four youth refused additional assessment, and 111 were excluded because there were discrepancies between self-reported trauma and clinical assessment (see Hoagwood et al., 2006 for a full description). Thirty-two are excluded from these analyses because they received treatment as usual. Of the 557 youth who received either trauma-specific CBT or brief CBT skills interventions at baseline, 306 (54.0%) had 6-month PTSD Reaction Index scores; these are the focus of this study.

Measures

Assessment instruments were administered to both trauma-specific CBT and brief CBT skills groups at baseline (pretreatment assessment), and at 3-, 6-, and 12-months postbaseline. Measures assessed trauma (via the PTSD Reaction Index), trauma exposure (via a World Trade Center exposure screen), and other related constructs (e.g., anxiety, depression, and strengths, via the Strengths and Difficulties Questionnaire of Goodman, 1997 and the Behavioral and Emotional Rating Scale of Epstein & Sharma, 1998). All assessment instruments were administered to both groups at baseline (pretreatment), and at 3-, 6-, and 12-months postbaseline. We present results from the PTSD Reaction Index, the primary outcome measure for the analyses (see below), at 6 months.

The UCLA PTSD Reaction Index measures symptoms of PTSD among youth between 6 and 16 years of age. The scale is based upon PTSD criteria established by the *Diagnostic and*

Statistical Manual of Mental Disorders, Fourth Edition (*DSM-IV*; American Psychiatric Association, 1994). Seven items assess *DSM-IV* A1 criteria (e.g., being a witness to or experiencing an event that caused serious harm, or threatened or caused death), and five items assess A2 criteria (feelings of fear, helplessness, and distress). Items are rated as either present or absent. Additionally, 20 items anchored along a 5-point Likert scale (ranging from 0 = *none of the time* to 4 = *most of the time*) assess B, C, and D symptom clusters (intrusion, avoidance, and arousal; Zatzick et al., 2006). Total Reaction Index scores between 12 and 24 suggest a mild PTSD reaction, 25–39 a moderate reaction, 40–59 a severe reaction, and greater than 60 a very severe reaction (Pynoos et al., 1993). Psychometric testing shows the scale to have excellent interrater reliability, Cohen's $\kappa = .88$ (Pynoos et al., 1987), and good internal validity (e.g., Nader, Pynoos, Fairbanks, & Frederick, 1990). Scores in the moderate and severe range were highly associated with a *DSM* diagnosis of PTSD (Pynoos et al., 1993).

Procedure

Four types of training and consultation supports were provided to all participating clinicians. The first tier included two rounds of direct training from the manual developers in trauma-specific CBT. One hundred seventy-three clinicians were trained in this model. The second tier consisted of monthly clinical consultation calls performed by the CATS Consortium clinical project director and the manual developers for the supervisors and clinicians at each site. The third tier consisted of local site-specific consultation by the site's clinical training director. Much of this consultation focused on fidelity to the treatment models and problem-solving implementation challenges (see CATS Consortium, 2007, for a full discussion). The fourth type of training focused on structured engagement strategies, based on the McKay model (McKay, Lynn, & Bannon, 2005; McKay, McCadam, & Gonzales, 1996). The impact of this engagement training was very successful, with 85% show rates for treatment obtained (see Rodriguez et al., in press).

Data Analysis

A regression discontinuity (or need-based assignment) quasi-experimental design was used (Cappelleri & Trochim, 1994, 1995). Given that ethical and logistical concerns precluded randomly assigning severely distressed youths to a no-treatment or wait-list control condition, the regression discontinuity design was selected on the basis that (a) it allows between-groups comparisons of outcomes without randomized assignment to experimental conditions, (b) it provides unbiased estimates of treatment effects if assumptions are met, (c) it is second only to randomized experimental designs in the level of causal inference permitted, and (d) it enables comparison of strategies for matching intensity of care to level of need in postdisaster conditions when resources are limited. Whereas estimates of treatment effects in randomized designs involve mean-level comparisons, estimates of effects in regression discontinuity designs involve comparisons of regression line slopes and intercepts. Regression discontinuity designs involve assigning participants to experimental conditions (in this case, trauma-specific CBT vs. brief CBT skills based on whether the participant's score on an assignment variable (the PTSD Reaction Index) measured at pretreatment falls above or below a prespecified cutoff score. Treatment effects in regression discontinuity designs are depicted by (a) fitting least squares regression lines separately for each experimental condition, regressing posttest scores on pretest scores; then (b) making predictions from each experimental condition for the expected outcome at the threshold based on the regression line fitted for the respective experimental condition; and finally (c) comparing the two predictions at the threshold based on the two experimental conditions (Shadish, Cook, & Campbell, 2002).

Using the regression discontinuity design, children with baseline PTSD Reaction Index scores greater than or equal to 25 were assigned to trauma-specific CBT and children with baseline PTSD Reaction Index scores less than 25 were assigned to the brief CBT skills group. We analyzed two primary outcomes: (a) change in the 6-month PTSD Reaction Index score, and (b) rate of change of the PTSD Reaction Index scores over time (i.e., rate of change for 0, 3, and 6 months).

We regressed the 6-month PTSD Reaction Index score on baseline PTSD Reaction Index score separately for the trauma-specific CBT group (score $\geq$ to 25) and the brief CBT skills group (score < 25). The difference, or discontinuity, between the two regression lines at the cutoff provided an estimate of the trauma-specific CBT versus brief CBT skills effect. The regression discontinuity design involves adjusting for baseline scores using the cutoff that was used to make treatment assignments.

The statistical significance of this effect was tested using the difference divided by the square root of the sum of the squares of $SE_{\text{trauma-specificCBT}}$ and $SE_{\text{brief CBT skills}}$. This statistic has a t-distribution with $n_1 + n_2 - 4$ degrees of freedom where n_1 is the number of children with baseline PTSD Reaction Index scores ≥ 25 and n_2 is the number of children with baseline PTSD Reaction Index scores < 25. All tests were two-sided.

The rate of change outcome (i.e., slope of PTSD Reaction Index over time) was analyzed using Supermix software for mixed-effects modeling (Hedeker & Gibbons, 1996). First, we regressed the PTSD Reaction Index score on time (0-, 3-, 6-, or 12-months postbaseline), baseline PTSD Reaction Index score and the month-by-baseline PTSD Reaction Index interaction. This equation was used to calculate rate of change as a linear function of baseline PTSD Reaction Index. Using this equation, we followed the approach described above. The standard errors for the rate of change were calculated using a special feature of Supermix. Quadratic terms were added if they significantly improved the R^2 for the 6-month PTSD Reaction Index outcome, or -2 log likelihood for the rate of change outcome.

The primary analyses used all eligible children for two outcomes (a) a 6-month PTSD Reaction Index score, and (b) rate of change in PTSD Reaction Index score over time. The primary analysis used all children (445 trauma-specific CBT children and 112 brief CBT skills). However, 6-month PTSD Reaction Index scores were available for only 239 trauma-specific CBT children and 67 brief CBT skills children ($n = 306$).

RESULTS

The final sample ($N = 306$) reported posttraumatic stress scores within the mild range (PTSD Reaction Index scores of 17–24), or the moderate to severe range (PTSD Reaction Index scores of 25 and above). The mean age of participants was 11.6 years. The trauma-specific CBT group was predominantly female (57%), whereas the brief CBT skills group was primarily male (55%). The sample was 63% Latino, 13% African American, 11% White, and 7% other, including mainly mixed race, Asian, and Middle Eastern. Overall, the majority of the sample was low-income, with over 45% of families earning an income of less than $15,000 per year.

Exposure to traumatic events as measured by the WTC exposure screen indicated 51% of children in the CATS Consortium project experienced "high impact" WTC exposure, defined as having first-hand experience with the disaster including being in, knowing someone who was in, or knowing someone who perished in the WTC disaster. Consistent with the need-based assignment or regression discontinuity design of this evaluation, the PTSD severity at baseline as assessed by the PTSD Reaction Index showed that youth in the trauma-specific CBT group had higher PTSD Reaction Index score average ($M = 36.61$, $SD = 9.36$) compared to children in the comparison group ($M = 20.75$, $SD = 2.74$). Thus youth in the trauma-specific CBT condition had a probable diagnosis of PTSD. Steinberg and colleagues (2004) identify a cutoff score of 38 as indicative of probable PTSD with good sensitivity and specificity. Additional differences between groups at baseline were found: Children in the trauma-specific CBT group were significantly more likely to report victimization in the community, 32.8% versus 9.8%, $\chi^2(1, N = 306)$, $p < .05$; having seen a dead body, 30.3% vs. 14.3%, $\chi^2(1, N = 306)$, $p < .05$; or having been touched inappropriately by an adult, 17.5% vs. 5.4%; $\chi^2(1, N = 306)$, $p < .05$, compared to youth in the comparison group.

Comparison of pre- to postchanges in the mean PTSD Reaction Index scores in the two groups showed decreases in trauma symptoms for both groups. The trauma-specific CBT group mean scores at baseline were 36.61 and at 6-month postbaseline were 21.73. The brief CBT skills group mean baseline PTSD Reaction Index scores were 20.75 and at 6 months were 12.82. Thus, the trauma-specific CBT group experienced a change of 14.88 points on the PTSD Reaction Index (from probable PTSD diagnosis to mild range) and the brief CBT skills group experienced a change of 7.93 points (all within the mild range).

Results are presented using linear models without quadratic terms, as quadratic terms added little to explain additional variability. For the sample of all eligible children, the estimated 6-month PTSD Reaction Index score at the cutoff was 17.03 for the trauma-specific CBT group and 14.00 for the brief CBT skills group, with a significant difference of 3.08 points, $t(302) = 5.99$, $p < .001$. Also, the rate of change over time at the cutoff was -1.02 points per month for the trauma-specific CBT group and -1.51 points per month for the brief CBT skills group with a nonsignificant difference of 0.49 points per month, $t(302) < 1$. Figures 1 and 2 present these results graphically.

DISCUSSION

The CATS Consortium was created in a postdisaster context. Notably, the consortium involved academic researchers, state and city policy makers, treatment developers, and clinical administrators who together created an infrastructure that was sustained not only during the project, but beyond the end of its funding. Through this infrastructure, 173 practicing clinicians actively delivered trauma-related mental health services to children and adolescents affected by the September 11th disaster and other traumatic events. The project included intensive clinical training and ongoing monthly consultation for 18 months by treatment developers and trained clinical consultants for youth with clinically significant trauma symptoms and mental health needs. The project also provided treatment services for youth with mild trauma symptoms. Through use of a common cross-site protocol for all participating agencies, an innovative design was used and clinical outcomes were assessed. The design (regression discontinuity or need-based assignment) involved assignment of youth to different levels of intensity of care based on degree of trauma symptoms.

We examined outcomes over time from baseline to 6 months for the 306 youth who were assigned to receive trauma-specific CBT therapies or to comparison services, which consisted of brief skills training in CBT techniques (i.e., brief CBT skills). Analyses using mixed-effects modeling indicated that the rate of change over time was not significantly different for the trauma-specific CBT group versus the brief CBT skills comparison group. Both groups improved over time and their trauma symptoms decreased. The fact that the rate of change was similar for the two groups is consistent with other outcome studies conducted in naturalistic settings. The trauma-specific CBT group experienced an improvement in clinical symptoms moving from a probable PTSD diagnosis indicative of moderate to severe trauma to the mild range. The brief CBT skills group, which was a briefer intervention, experienced a change and moved from higher mild to lower mild scores, in other words, all in the mild range. Although there was no statistically significant difference between groups, it is noteworthy that the

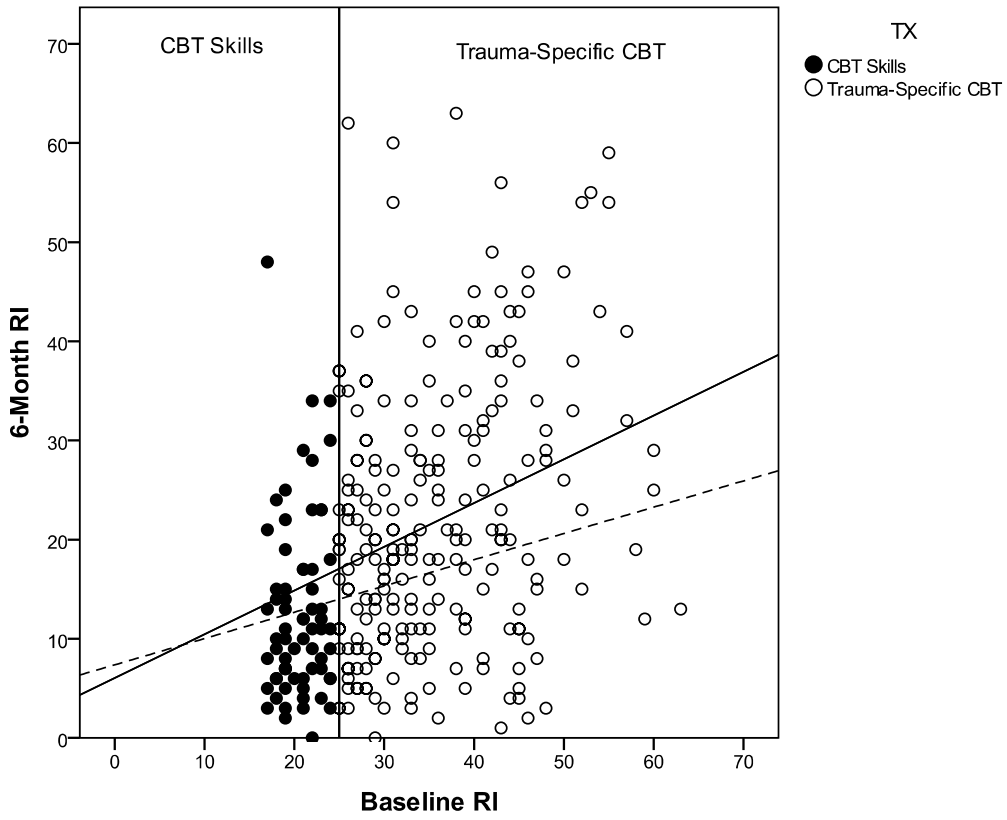

Figure 1. Regression discontinuity analysis of 6-month Posttraumatic Stress Disorder Reaction Index (PTSD-RI) outcomes. CBT = Cognitive–behavioral therapy.

trauma-specific CBT group, which began treatment with greater trauma exposure and considerable family/environmental adversity, experienced significantly more clinical improvement, losing their probable PTSD diagnostic status and moving into the mild range.

In addition, it appears that each group received the type of intervention it needed to experience clinically important improvement, and that the use of this matching algorithm was successful. Training and consultation enabled therapists to learn how to provide both a brief skills-based approach to youth with low levels of trauma symptoms and a more intensive approach for those with more severe trauma symptoms. Using the regression discontinuity design, it appears that a successful matching algorithm was implemented.

Prior to launching the study we did not know whether clinicians in routine practice would accept training on manualized CBT. Not only did they accept it, but many have continued to apply CBT in their practice. We found that these therapies could be feasibly delivered in outpatient, community, and school-based clinics. The infrastructure created for the CATS Consortium was sustained until 2007 (5 years after the consortium began and 2 years after funding had ended). Because of its success, the New York State Office of Mental Health in 2006 created a permanent infrastructure for evidence-based treatment training and consultation within its central office. Called the Evidence-based Treatment Dissemination Center, it provides a full year of training and consultation on CBT for up to 400 clinicians and supervisors statewide (Gleacher et al., 2010; North et al., 2008).

The study had a number of limitations. A traditional experimental design (e.g., one that uses random assignment, no wait-list, or no-treatment control groups) was not used due to the need for immediate delivery of trauma treatment services. Although the regression discontinuity design has many strengths as described above, according to Shadish et al. (2002) the design's validity may be compromised by history effects—extraneous events occurring contemporaneously with treatment. Given the chaotic life circumstances of post September 11th and of these highly stressed families, this is a legitimate concern. We must also consider the possibility that the children in both conditions might have improved over time without any treatment. This seems unlikely given findings from longitudinal studies indicating that untreated trauma can cascade into other problems, including depression, substance abuse problems, and lifelong risks (Layne et al., 2001). Another

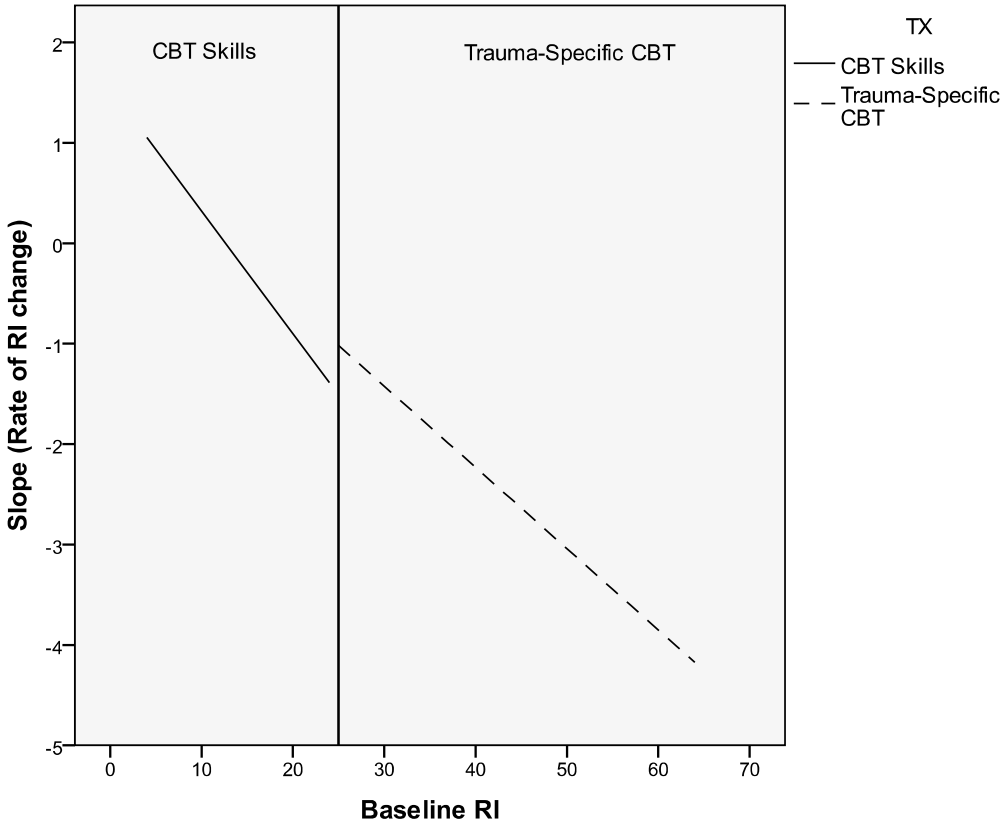

Figure 2. Regression discontinuity analysis discontinuity analysis of rate of change in Posttraumatic Stress Disorder Reaction Index (PTSD-RI) outcomes. CBT = Cognitive–behavioral therapy.

limitation was the inability to track specific types of service use in the comparison condition, which was not possible due to funding limitations.

We were also unable to assess treatment fidelity to either of the treatment models in this evaluation. Although efforts were made to help clinicians adhere to treatment protocols through training and consultation, we were not able to independently assess fidelity. We did include clinician-completed self-report fidelity measures in the trauma-specific CBT group; nevertheless, even this admittedly limited level of fidelity monitoring was infeasible in the comparison group.

Notwithstanding these limitations, the outcomes associated with the trauma-specific treatments suggest that children improved substantially, despite significant levels of baseline clinical comorbidities and stressors. Children with moderate to severe trauma symptoms improved and the rate of change or improvement was similar for both this group and the mildly symptomatic groups. This is a noteworthy finding suggesting that providing intensive trauma-specific CBT to children with moderate to severe trauma symptoms in real-world, naturalistic settings yielded equivalent improvement to providing a brief CBT skills intervention to children with mild trauma symptoms.

The acceptability of the training and consultation model to agency staff and the feasibility of our implementation approach suggest that postdisaster implementation of evidence-based therapies can be accomplished. A number of factors contributed to this: sites' prior history in providing trauma services; deep commitment by clinicians, supervisors, and directors to receiving training and consultation; intensive, ongoing, and systematic support by highly skilled and expert treatment developers (J. Cohen, A. Mannarino, C. Layne, W. Saltzman) who donated literally hundreds of hours to the project; use of systematic community outreach strategies; and the provision of intensive onsite technical support by New York State Office of Mental Health, Columbia University evaluation staff, and by McKay and her team on retention improvement strategies.

The CATS Consortium created an efficient infrastructure for implementing and evaluating evidence-based CBT trauma treatments for youth in the aftermath of a major disaster. We hope that the lessons learned from this study can be useful to other

communities faced with rapid deployment of mental health services for youth and their families after a disaster.

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