

# Structured Sensory Trauma Intervention Program For Elementary School Children

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Recent exposure to school, community and domestic violence as well as other events which traumatize children has highlighted the urgency to identify effective treatments for complicated grief and post-traumatic stress disorders. Children experience all the reactions of post-traumatic stress (PTSD) following both violent and non-assaultive incidents. Research since the mid 1980's to date clearly supports the existence of PTSD in children exposed to violence (Delany-Black, V., et al, 2002; Pynoos and Nader, 1988; Black, Hendricks and Kaplan, 1992; Dykman, McPhearson and Ackerman, 1997).

However, trauma is not specific to violence. Natural disasters such as fires (McFarlane, Policansky & Irwin, 1987; March, Jackson, Costanzo & Terry, 1993) hurricanes (Lonnigan, Shannon, Finch, Taylor & Dougherty, 1991; Vernberg, Eric, LaCreca, Silverman & Prinstein, 1996), boating disasters (Yule, 1992), burns and other serious accidents, and medical procedures (Stubner, Nader, Yasuda, Pynoos & Cohen, 1992) can also induce PTSD reactions in children and adolescents. Living with a terminally ill adult or sibling, drownings, house fires, car fatalities, living with substance-abusing parents and divorce were also found to be identified as incidents preceding the onset of PTSD in children (Raider, Steele & Santiago, 1999).

The reactions which are experienced following trauma significantly impacts learning, behavioral, social, emotional and psychological functioning. Traumatized children are more likely to have poorer school performance, decreased I.Q. and reading ability, lower grade point average, and more days of school absence even if they do not develop post-traumatic stress disorder (Stein, P., et. al., 2003). Research on school based treatment programs for traumatized children was conducted in the Los Angeles, California School District. A partially randomized study was conducted in 2001 in which 198 students exposed to violence in elementary and middle schools (grades 3-8) received a manualized group cognitive behavioral therapy (Katkokas, H., et. al., 2003). Students who experienced trauma-related depression and/or post-traumatic stress disorder demonstrated modest reductions in depression and post-traumatic stress symptoms. Results must be viewed as inconclusive since the method used to obtain the study population introduced bias, subjects were only partially randomized and attrition occurred at differing rates across treatment groups. A randomized controlled study of 6<sup>th</sup> graders exposed to violence with symptoms of post-traumatic stress, and depression was also conducted in the Los Angeles, California School District in 2001-2002 (Stein, B.D., et. al, 2003). Sixty-one middle school children were randomly assigned to a group cognitive –behavioral program and 65 to a wait list comparison group. After the intervention program the treatment group demonstrated significantly lower scores on PTSD symptoms, depression and psychological dysfunction.

## **TRAUMA TREATMENT**

Cognitive/behavioral therapies have been in widespread use to treat children and adolescents who have been traumatized. In fact, cognitive/behavioral therapy has been recommended as the “best practice” approach by the Society for Traumatic stress (Ovaert,L.B., Cashel, M.L., & Sewell, K.W., 2003) and American Academy of Child and Adolescent Psychiatry (AACAP, 1998). However, because of the cognitive distortions and deficits produced by traumatic events it may be more difficult and potentially

less effective to treat children and adolescents using only cognitive/behavioral therapy. The effectiveness of cognitive/behavioral therapy may be enhanced with the inclusion of sensory based activities.

Therapeutic events and terror produce arousal which is the neurophysiological response to trauma. Therefore, a traumatized child's predominant processing of the trauma will be in the subcortical and limbic areas of the brain which deal with non-verbal information (Perry, 2000). Trauma is processed to a lesser extent in the neocortex area of the brain that involves reasoning, linear thinking, analysis, the ability to make sense of the experience. The child who is lingering or frozen in a state of arousal due to past or current trauma has difficulty reassigning or thinking things through. These cognitive deficiencies, therefore, suggest the need for non-cognitive approaches to help children overcome or minimize the learning, emotional and behavioral problems deriving from the traumatic arousal.

Memory has two functions - implicit and explicit. Explicit memory sometimes referred to as declarative memory refers to primary cognitive processes. In explicit memory children and adolescents have access to language. They can use words to describe what they are thinking and feeling. Explicit memory allows children and adolescents to process information, to reason, to make sense of their experience. These cognitive processes facilitate coping with traumatic arousal.

What may be needed to supplement cognitive/behavioral therapy is sensory based therapeutic activities to assist with the processing of the implicit memories of trauma and to restore more effective emotional functioning. Once more effective emotional functioning is restored, cognitive behavioral therapeutic activities can more easily develop clearer thinking and positive coping strategies. The Structured Sensory Intervention for Traumatized Children, Adolescents and Parent (SITCAP) structured trauma treatment approach, which is the focus of this article, utilizes a series of drawing tasks and treatment specific questions that target the major sensations which are experienced in a traumatic event (e.g., terror, fear, worry, powerlessness). The premise of SITCAP is that traumatic memories are experienced at a sensory level and must be reactivated in a safe environment in order to be moderated and tolerated with a sense of power and feeling of safety.

The purpose of this article is to report on a controlled research study to demonstrate the efficacy of SITCAP in Three elementary schools in Taylor, Michigan. The study also seeks to demonstrate the feasibility of providing trauma treatment to children in a school setting.

This randomized controlled research study was conducted at the Eureka Heights, Fisher, Taylor Parks and Myers Elementary Schools, grades 2 to 5, in the Taylor School District. The study was carried out by Professor Melvyn C. Raider, School of Social Work, Wayne State University; The National Institute for Trauma and Loss in Children, and The Guidance Center. Eighty-nine children completed the *I Feel Better Now!* trauma treatment program. Pre-test and post-test and three month follow-up data will be discussed in this article.

### **Screening**

Parents/guardians whose child has experienced or witnessed one or more traumatic events had the opportunity to grant permission for their child to be screened for severity of trauma symptoms. Children also had opportunity to orally assent. Screening took place at elementary schools at no cost to parents/guardians. Screening was conducted by The Guidance Center therapists utilizing the Child Trauma Symptom Checklist (TSCC). Children in grades 4 and 5 were screened in groups of 25. Children in grades 2 and 3 were screened in smaller groups. Parents/guardians were informed of the results of the trauma screening. Children with sub clinical trauma scores were excluded from the study.

### **The I Feel Better Now! Trauma Treatment Program**

The *I Feel Better Now!* Trauma Program consisting of 10 group sessions was conducted after school. Parents/guardians participated in two sessions. Parents also provided information prior to the beginning of the group sessions. The sessions were provided at no cost to parents/guardians. The Taylor School System provided transportation for children after each session. Group sessions were conducted by therapists employed by The Guidance Center utilizing the manualized *I Feel Better Now!* Program. Therapists were trained and certified to conduct the *I Feel Better Now!* Program by the National Institute of Trauma and Loss in Children.

## **Procedure**

All parents completed the Parent Questionnaire (PQ). All children/youth completed the Child and Adolescent Questionnaire (CAQ). These questionnaires gathered information on trauma symptoms and trauma severity.

Children were randomly assigned to either Group A (treatment group) or Group B (waitlist/comparison group). The rationale for establishing the waitlist/comparison group was that group therapists did not have the capacity to provide treatment to all screened children at the same time. Therefore, approximately half the children would have been placed on a wait list in any event.

### **Group A (treatment group):**

- Group A was provided with 10 weeks of trauma counseling in a group setting.
  - Parents provided family demographics information, trauma history, severity of symptoms, service utilization and information about home environment (Core Clinical Characteristics form).
  - At intake and discharge, parents and children completed the following self-report questionnaires: the Briere Trauma Symptom Checklist (TSCC) and the Achenbach Child Behavior Checklist (CBCL). The TSCC and CBCL are standardized with high reliability and validity. In addition, children completed the Child and Adolescent Questionnaire (CAQ). This instrument was developed by the Principal Investigator. It was used in prior published research, and is reliable and valid.
- Three months after the completion, parents and children will complete all instruments identified above. Follow-up data will demonstrate whether or not children maintain gains evidenced at the completion of trauma treatment. Follow-up data will be collected in June, July and August 2007
- Throughout the child/youth's treatment, child/youth completed the Life Events Checklist (LEC) which gathered information on recent traumatic events. In addition, the therapist completed the Fidelity of Treatment Checklist (FTC), which assured that treatment was consistent with trauma treatment model. Throughout the treatment process the therapist recorded progress notes in the child's treatment file.

### **For those randomly assigned to Group B (waitlist/comparison group):**

- Group B was provided regular telephone contact with the clinician and began trauma counseling in a group setting after 10 weeks. During the phone calls, members of Group B were asked to complete the Life Events Checklist (LEC). Based on the assessment of the Checklist, the clinician may have met with parents and/or child for individual psychotherapy or referred those to an agency for additional services.
- After the ten week waiting period, all children and parents in Group B was provided with the 10 week *Feel Better Now!* Trauma Treatment Program in a group setting and followed the same process as Group A.

## **RESULTS**

### **TRAUMA SYMPTOM CHECKLIST FOR CHILDREN (TSCC)**

Table I reflects paired t-tests for the seven scales of the TSCC. Table I reflects results of changes in scales from pre-test to post-test for the Waitlist/Control Group. The Waitlist/Control Group did demonstrate statistically significant changes ( $p < .05$ ) for the post traumatic stress scale. All other scales showed no significant reductions in trauma symptoms.

An ANOVA analysis of Pre-test Post-test and follow-up administrations of the TSCC was completed. The ANOVA analysis examined significant within group change of pre-test, post-test and follow-up mean scores for the continued treatment groups and waitlist groups (after waitlist groups received treatment). The ANOVA procedure used provided multiple comparisons between the within group variables using the Bonferroni procedure (adjusting alpha level to prevent inflation of Type I error). Sphericity was assumed since results of the Greenhouse – Geisser, Huynh-feldt, and Lower-bound F statistic were identical. The ANOVA analysis demonstrated statistically significant within group change ( $p < .001$ ).

Table II reflects post-hoc paired t tests comparing pre-test to post-test and post-test to follow-up for the combined treatment group and waitlist groups. Since there is no post-hoc analysis available for repeated measures within groups the post-hoc paired t test were conducted to indicate where statistically significant results were demonstrated. For the comparison of Pre-test to post-test mean scores statistically significant changes in mean scores were demonstrated for all scales of the TSCC. The anxiety, dissociation, dissociation overt and dissociation fantasy scales demonstrated statistically significant reductions of

symptoms at the .05 alpha level ( $p < .05$ ). The depression, anger, and post-traumatic stress scales demonstrated statistically significant reductions of symptoms at the .01 alpha level ( $p < .01$ ). However, since the waitlist (control) group demonstrated a statistically significant reduction in the post-traumatic scale it cannot be inferred that the statistically significant reduction in the post-traumatic stress scale for the combined treatment group and waitlist group (after treatment) is solely a function of the *I Feel Better Now!* trauma treatment model.

The comparison of post-test and follow-up scores, demonstrated further reductions in mean symptoms scores for all scales of the TSCC. However, these reductions did not achieve statistical significance. It is evident that the reductions in symptoms from pre-test to post-test were maintained at three month follow-up.

**See Table 1 on Bottom**

**See Table 2 on Bottom**

#### CHILD AND ADOLESCENT QUESTIONNAIRE (C.A.Q)

Pre and Post test reflect paired t-tests for the three trauma scales in the CAQ was conducted for the waitlist/control group. All scales did not demonstrate statistically significant changes in trauma symptoms. An ANOVA analysis of pre-test, post-test and follow-up administrations of CAQ. The ANOVA analysis demonstrated statistically significant within groups change in mean scores ( $p < .001$ ).

Table III reflects post-hoc paired t test comparing pre-test to post-test and post-test to follow-up mean scores for the combined treatment groups and waitlist groups. For the comparison of pre-test to post-test mean scores, statistically significant changes in scores were demonstrated for all scales of the CAQ. ( $p < .001$ ). The comparison of post-test and follow-up mean scores for all scales of the CAQ, demonstrated further reductions in mean symptom scores for all three scales of the CAQ. However, these reductions did not achieve statistical significance. It is evident that the reductions in trauma symptoms for pre-test to post-test were maintained at three month follow-up.

**See Table 3 on Bottom**

#### CHILD BEHAVIOR CHECKLIST (CBCL)

Table IV reflects paired t-tests for changes in syndrome scales on the CBCL. It reflects results of the pre-test to post-test to post-test comparisons for the Control Group. The Waitlist/Control Group demonstrated statistically significant changes in symptoms for the academic performance, aggressive behavior, anxious/depressed, attention problems, internalizing behavior, externalizing behavior and total problems syndrome scales.

An ANOVA analysis of pre-test, post-test and follow-up administrations of the CBCL was completed. The ANOVA analysis demonstrated statistically significant within group change for all syndrome scales. The somatic complaints scale was significant at the .05 alpha level ( $p < .05$ ) all other scales were significant at the .001 alpha level ( $p < .001$ ).

Table V reflects post-hoc paired t test comparing pre-test to post-test and post-test to three month follow-up mean scores for the combined treatment groups and Waitlist Groups. For the comparison of pre-test to post-test mean scores statistically significant changes in scores were demonstrated for all scales of the CBCL. For the comparison of post-test to follow-up mean scores for anxious/depressed, withdrawn depressed, somatic complaints, social problems, thought problems and rule breaking behavior scales marginally increased. These small increases, however, did not achieve statistical significance. For the attention problems and total problems scales mean scores marginally decreased. The small decreases, however did not attain statistical significance. For the aggressive behavior, internalizing behavior and externalizing behavior scales mean scores substantially decreased attaining statistical significant ( $p < .05$ ). For the aggressive, internalizing and externalizing behavior scales further reductions in problem behaviors occurred between post-test and three month follow-up. For all other syndrome scales gains made between pre-test and post-test were maintained. For the competence scales of the CBCL between post-test and follow-up, the activities scale demonstrated a small improvement. This improvement did not achieve statistical significance. The academic performance scale demonstrated a small decline. This decline did not achieve statistical significance. However, the social interactions and total competence scales demonstrated declines which attained statistical significance ( $p < .001$ )

**See Table 4 on Bottom**  
**See Table 5 on Bottom**

## **DISCUSSION**

Most children who participated in the *“I Feel Better Now!”* trauma treatment program demonstrated outstanding reductions in most trauma symptoms, psychological, emotional and behavioral problems.

The Child and Adolescent Questionnaire (CAQ) measures post-traumatic stress symptoms in three domains re-experiencing traumatic events, avoidance of stimuli associated with traumatic event and symptoms of arousal due to traumatic events. The control/waitlist group showed no reduction in these trauma symptoms while waiting for trauma treatment to begin. The combined treatment and waitlist groups (after receiving treatment) demonstrated outstanding statistically significant changes ( $p < .01$ ). This clearly demonstrates that it was the treatment program that produced these reductions in trauma symptoms. Gains in treatment were maintained in the three-month follow-up period.

The Trauma Symptom Checklist (TSCC) measures trauma symptoms of anxiety, depression, anger, post-traumatic stress, and dissociation. The control/waitlist group showed no statistically significant reduction in these symptoms except for post-traumatic stress which showed a reduction at the .05 level ( $p < .05$ ). It is unclear as to the reason for this improvement. However, it may be hypothesized that the screening process, orientation process for children and parents, and periodic therapist contacts during the waitlist period may have facilitated this change. Wayne State University’s Human Investigations Committee, which approved the Protocol for this study, required that all children assigned to the waitlist (control) group have therapist contact on a bi-weekly basis during the waitlist period. The purpose of the therapist contact was to ensure that intervention was provided if a child was in a crisis situation. It can be hypothesized that this intervention had a positive impact on some children in the waitlist/control group who demonstrated a statistically significant reduction of symptoms on the post-traumatic stress scale. For the combined/waitlist treatment group, all symptoms as measured by the Checklist (TSCC) showed outstanding statistically significant reductions of trauma symptoms between pre-test and post-test. Since both the control/waitlist group and the treatment group demonstrated statistically significant changes for the post-traumatic stress scale results are inconclusive for that one scale. Gains in treatment were maintained in the three-month follow-up period.

The Achenbach Child Behavior Checklist (CBCL) measures social, behavioral, psychological and emotional behaviors and problems of children. It is a widely used mental health measure for children and youth. The Child Behavior Checklist (CBCL) measures activities such as sports, social interactions, academic performance and total competence (a composite of activities, social and academic). It also measures eleven behaviors and problems: Anxious/depressed, withdrawn/depressed, somatic complaints, social problems, thought problems, attention problems, rule breaking behavior, aggressive behavior and internalizing and externalizing behaviors. The waitlist/control group demonstrated no statistically significant changes for the activities, social and total competence scales as well as the withdrawn/depressed, somatic complaints, social problems, thought problems and rule breaking behavior scales. However, the academic performance scale, aggressive behavior, anxious/depressed, attention problems, internalizing behavior, externalizing behavior and total problem scale demonstrated statistically significant changes ( $p < .05$ ). Here again, it may be hypothesized that the orientation process for children and parents screening process and therapist contact during the waitlist period may have contributed to these positive changes. For the treatment group and waitlist group all competence and syndrome scales demonstrated outstanding statistically significant improvements ( $p < .01$ ). Since both the control/waitlist group and the treatment groups demonstrated statistically significant changes for academic performance, anxious/depressed, attention problems, aggressive behavior, internalizing behaviors, externalizing behaviors and total problem scales results are inconclusive for these seven scales. At three-month follow-up, further improvement occurred in the aggressive, internalizing and externalizing behavior scales. Statistically significant declines on the social interactions and Total Competence Scales (Total Competence Scale is a composite scale which includes social interactions) occurred during the follow-up period as well. It should be noted again that much of the follow-up data

was collected during the summer break and it may be hypothesized that children had fewer opportunities for social interactions and structured activity.

To summarize, overall most children demonstrated outstanding reductions in most trauma symptoms and psychological, emotional and behavioral problems as a result of their participation in the ***I Feel Better Now! Program***. Statistically significant reductions of trauma symptoms and problem behaviors occurred from pre-test to post-test. Because the average gains from pre-intervention to post-intervention were so great there was little additional improvement in gains from post-intervention to three-month follow-up. However, reductions in trauma symptoms and psychological and behavioral problems were largely maintained during the follow-up period.

Results of this randomized controlled trial of the SITCAP Treatment Model ***I Feel Better Now!*** supports the effectiveness of the model. It also confirms the findings of a previous program evaluation study of the individual modality of SITCAP with 168 children in which statistically significant reductions of PTSD symptoms was demonstrated (Steele, W. and Raider, M. *Structured Sensory Intervention for Children and Parents*, Edward Mellon Press 2001.

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TABLE I – TRAUMA SYMPTOM CHECKLIST FOR CHILDREN (TSCC)  
 Paired t-test N = 39  
 CONTROL GROUP (WAITLIST)

Scale	Mean Pre-Test	Mean Post-Test	Mean Difference	T	Sig (2 tailed)
Anxiety	10.74	9.38	1.36	1.637	.110
Depression	9.67	9.23	.44	.405	.688
Anger	9.51	9.69	-.18	-.167	.868
Post-Traumatic Stress	13.79	11.77	2.026	2.35	.024*
Dissociation	10.82	10.64	.18	.144	.886
Dissociation Overt	7.87	7.69	.18	.188	.852
Dissociation Fantasy	2.95	2.95	.000	.000	1.000

\*p = < .05

TABLE II – TRAUMA SYMPTOM CHECKLIST FOR CHILDREN (T.S.C.C.)  
 COMBINED TREATMENT AND WAITLIST GROUPS (N=83)  
 POST HOC PAIRED t TEST

Scale	Pre-Test	Post-Test	Mean Difference	t	Post/ Follow-Up	Mean Difference	t
Anxiety	10.10	7.94	-2.16	2.91*	6.95	-.99	1.40
Depression	9.53	6.98	-2.55	3.79**	6.94	-.04	.06
Anger	10.90	7.83	-3.07	3.63**	7.46	-.37	.48
Post Traumatic Stress	12.76	9.57	-3.19	4.11**	8.89	-.68	.94
Dissociation	10.98	8.14	-2.83	3.18*	7.61	-.53	.68
Dissociation Overt	7.66	5.48	-2.18	3.32*	5.25	-.23	.39
Dissociation Fantasy	3.31	2.66	-.65	2.02*	2.36	-.30	1.02

\* SIG = p<.05

\*\* SIG = p<.01

TABLE III – CHILD AND ADOLESCENT QUESTIONNAIRE (CAQ)  
 COMBINED TREATMENT AND WAITLIST GROUPS (N = 83)  
 POST-HOC PAIRED t TEST

Scale	Pre Test	Post Test	Mean Difference	t	Post/ Follow up	Mean Difference	t
Re-experiencing Traumatic Event	31.93	20.78	-11.15	8.61**	19.51	-1.28	1.33
Avoidance of Stimuli of Traumatic Event	30.95	23.10	-7.85	6.000**	20.75	-2.35	1.85
Symptoms of Arousal due to Traumatic Event	25.51	18.75	-6.76	6.049***	17.25	-1.49	1.44

\*\* SIG=p<001

TABLE IV – CHILD BEHAVIOR CHECKLIST (CBCL) SYNDROME SCALES  
 N = 39 Paired t-test  
 CONTROL GROUP (WAITLIST)

Scale	Mean Pre-Test	Mean Post-Test	Mean Difference	t	Sig (2 tailed)
Anxious/Depressed	8.821	6.128	2.692	2.475	.018*
Withdrawn/Depressed	5.590	6.513	-.923	-1.306	.200
Somatic Complaints	4.205	4.513	-.3078	-.418	.679
Social Problems	7.231	6.154	1.077	1.418	.164
Thought Problems	5.821	4.462	1.359	1.634	.110
Attention Problems	8.308	6.333	1.974	2.035	.049*
Rule Breaking Behavior	5.051	4.335	.667	.906	.371
Aggressive Behavior	11.103	6.872	4.231	3.527	.001**
Internalizing Behavior	16.359	10.179	6.180	3.483	.001**
Externalizing Behavior	14.821	9.179	5.641	3.398	.002**
Total Problems	64.513	51.872	12.641	2.211	.033*
Activities***	8.872	8.679	.192	.379	.707
Social (Interactions)***	5.500	5.526	.026	-.084	.933
Academic Perf.***	4.385	4.833	-.449	-2.052	.047
Total Competence***	18.218	18.795	-.577	-.838	.407

\*p < .05

\*\*p < .01

\*\*\*Increase in mean scores equals improvement

TABLE V – CHILD BEHAVIOR CHECKLIST (CBCL)  
 COMBINED TREATMENT & WAITLIST GROUPS N = 80  
 POST HOC PAIRED T TEST

	Pre-Test	Post-Test	Mean Difference	t	Post/Follow-Up	Mean Difference	t
Anxious/Depressed	6.63	3.28	-3.35	6.57**	3.33	.05	-.11
Withdrawn / Depressed	5.34	2.61	-2.73	5.89**	3.09	.48	-1.32
Somatic Complaints	3.98	2.88	-1.10	2.59**	3.11	.24	-.61
Social Problems	5.76	2.99	-2.78	6.31**	3.13	.14	-.32
Thought Problems	4.34	2.20	-2.14	4.50**	2.56	.36	-1.00
Attention Problems	6.40	3.51	-2.89	5.00**	3.01	-.50	.97
Rule Breaking Behavior	4.33	1.98	-2.36	5.07**	2.46	.48	-1.28
Aggressive Behavior	9.25	4.99	-4.26	5.41**	2.83	-2.16	3.192*
Internalizing Behavior	12.01	6.04	-5.98	6.03**	3.15	-2.89	3.61*
Externalizing Behavior	11.95	6.04	-5.91	5.20**	3.03	-3.01	3.18*
Total Problems	52.38	26.91	-25.46	8.55**	27.02	-.11	-.04
Activities***	9.08	11.08	2.00	-7.01**	11.33	-.25	-1.44
Social Interactions***	5.67	7.37	1.70	-6.03**	5.60	1.77	7.49**
Academic Perf. ***	4.40	5.31	.89	-5.66**	5.12	-.19	1.48
Total Competence***	19.00	24.02	5.03	-10.40**	22.04	1.98	6.00**

\*\*\* Increase = improvement

\*p<.05

\*\*p<.001