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TECHNICAL REPORT

National Evaluation of Safe Start Promising Approaches

Results Appendix C: Chelsea, Massachusetts

In Jaycox, L. H., L. J. Hickman, D. Schultz, D. Barnes-Proby, C. M. Setodji, A. Kofner, R. Harris, J. D. Acosta, and T. Francois, *National Evaluation of Safe Start Promising Approaches: Assessing Program Outcomes,* Santa Monica, Calif.: RAND Corporation, TR-991-1-DOJ, 2011

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HEALTH and
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CHELSEA, MASSACHUSETTS, SAFE START OUTCOMES REPORT

ABSTRACT

The Chelsea Safe Start program developed an intervention with group therapy, home visitation, and case coordination components to improve outcomes for children (ages 0–17) exposed to violence. A full description of the interventions can be found in *National Evaluation of Safe Start Promising Approaches: Assessing Program Implementation* (Schultz et al., 2010). The program planned to conduct a quasi-experimental trial comparing children in the Chelsea Health Center with similar children recruited from a different clinic in a neighboring community. Chelsea enrolled 71 families in its intervention group, retaining 86 percent of them for the six-month assessment. For its comparison group, Chelsea enrolled only 11 families in the study and retained nine of them for the six-month research assessment. At baseline, caregivers reported that children had been exposed to an average of 3.1 types of violence during their lives. Children reported an average of 4.8 types of violence exposure at baseline. Thirty-eight percent of enrolled families reported baseline child posttraumatic stress disorder (PTSD) symptoms that fell in the "significant" range, and 80 percent had levels of parental stress that fell in the "clinical" range. Chelsea intervention group families received a range of therapy options, as well as case management, multidisciplinary team involvement, advocacy, and other services. Overall, the vast majority of families in the six-month analysis sample received some form of therapy, 44 percent received case management, 26 percent received advocacy services, and 18 percent had multidisciplinary team involvement.

Chelsea's lack of an adequate comparison group meant that it was not possible to statistically compare the intervention and comparison groups over time. Within the intervention group, there were some statistically significant differences over time, with caregivers reporting fewer child behavior problems at six and 12 months, fewer PTSD symptoms at 12 months, higher levels of assertion at six months, and lower levels of parental distress, parent-child dysfunction, and total parental stress at six months. Children in the intervention group also reported significantly fewer PTSD symptoms at 12 months, depressive symptoms at six and 12 months, and delinquency problems at six months. Although it appears that the intervention group families improved on a number of dimensions, evaluation of the impact of the intervention was not possible because of the lack of a comparison group to examine the difference in outcomes over

time. Overall, the Chelsea Safe Start model requires further testing with a comparison group to determine whether the improvements observed can be attributed to participation in the intervention.

INTRODUCTION

The Chelsea Safe Start program is located in the city of Chelsea, Massachusetts, approximately two miles north of Boston. In 2000, violence-related injuries in Chelsea were six times the statewide rate at 160 per 100,000 (Bureau of Health Statistics Research & Evaluation, 2000). In addition, child maltreatment rates in Chelsea appeared to be increasing just prior to the launch of the Safe Start program. Massachusetts General Hospital Chelsea (MGH) Health Care Center, the implementation site of the Chelsea Safe Start project, reviewed intake data from its domestic violence program and found that 93 percent of all program clients had children; 30 percent of those had children under 6 years old (Massachusetts General Hospital, 2004).

While there were some programs and organizations in Chelsea to help children and families stabilize after exposure to violence, there were perceived gaps in such services as outreach, follow-up, and coordination of care for high-risk families. To address these needs, Chelsea designed its Safe Start program to identify, respond to, and refer children exposed to violence to community supports and services. With this approach, it wanted to provide services that would lessen the impact of exposure to violence and promote healthy growth and development in children exposed to violence. The intervention targeted domestic violence, but children with exposure to community violence were also included.

Chelsea's plan for outreach and care coordination had three main components: group therapy, home visits, and case coordination. While these components were previously available at the Chelsea Health Center, Safe Start planned to strengthen and coordinate these services for children exposed to violence, and this presented an opportunity to evaluate the program.

The outcomes evaluation presented here presents data relevant to the question of whether the Chelsea Safe Start program, as implemented within this project, improves outcomes for children exposed to violence.

CHELSEA SAFE START

- **Intervention type:** Group therapy, home visits, and case coordination
- **Intervention length:** Three months for group therapy, up to two years for case coordination
- **Intervention setting:** Clinic and in-home
- **Target population:** Children who have been exposed to violence
- **Age range:** 0–17
- **Primary referral sources:** Mental health and pediatric units of the Chelsea Health Care Center, the Chelsea Police Department's Police Action Counseling Teams, the Harbor Area Department of Social Services, and public schools

INTERVENTION

The Chelsea Safe Start intervention model included group therapy, home visits, and case coordination. The intervention period lasted approximately three months for the group therapy and up to two years for the case coordination. Home visits were used to conduct a one-time assessment of the family's living situation and home environment. These visits were optional, occurring by family request. Otherwise, the services were primarily provided at the clinic. The program elements are described briefly in the following paragraphs. For a full description of the Chelsea intervention as it was delivered, see Schultz et al. (2010).

The therapy component primarily involved group therapy models designed for different age groups. These included

- Rainbow Dance for ages 0 to 3
- Kids' Club for ages 4 to 6
- Cool Youth for ages 8 to 11
- Teen Group for ages 12 and up.

Each of the group therapy programs focused on attachment, regulation, and competency, using trauma-informed interventions, techniques, and methods. Rainbow Dance was based on a curriculum focused on parent-child development, as well as mind-body connections (Macy, 2007; Macy et al., 2003). The sessions were held weekly, and there were no maximum or minimum numbers of sessions. Kids' Club used a 12-session group curriculum developed for the Massachusetts Department of Social

Services using what were described as "best practices" gathered from the literature (Cohen et al., 2005). Cool Youth used a 12-week interactive group therapy curriculum developed for the Massachusetts Department of Social Services (Northnode, 2007). The children and parents met at the same time but in separate groups. The curriculum for the children focused on violence exposure, with sessions such as feelings, safety planning, and solving conflicts. The curriculum for the parent group focused on helping parents understand the children's experiences and symptoms. Finally, the Teen Group was loosely based on the ARC (attachment, self-regulation, and competency) framework (Kinniburgh et al., 2005). There was also a concurrent parent group that was relatively unstructured, which focused on talking with the teens about what happened and helping make them feel safer. In addition, group therapy clinicians from the Mental Health Unit also provided individual, dyadic, and family therapy as needed.

An optional one-time in-home assessment was conducted for all Safe Start families. The assessment was completed by a Safe Start team member and additional staff from the clinical team as appropriate. The staff used a checklist adapted with permission from the Kaiser Family Foundation and the Harvard Center for Mental Health and Media. The purpose of the assessment was to observe the home environment for child supervision, media use, and safety issues and provide any needed supports, such as advocacy, education, resources, and case management.

Case coordination was conducted through a multidisciplinary team that met weekly to discuss and review each family's progress. The team developed a treatment plan based on the home visit, medical assessment, and information gathered as part of the research assessment. The treatment plan specified which services each family and child would receive. Case coordination focused on communication between service providers, family education and support to increase self-sufficiency and independence, service facilitation and coordination, family advocacy, and referrals to appropriate resources. Case coordination continued, as needed, throughout the families' involvement in treatment up until the last research assessment.

Efforts to monitor the quality of the program included the use of therapists who had prior training and experience in group and individual interventions with children ages 0 to 17 and their families. Also, the site conducted annual trainings on the ARC principles using case examples. New therapists were trained on the group therapy models prior to conducting any groups. The therapists also had access to any relevant manuals or materials related to the group therapy options and ARC. Clinical supervision was provided through weekly Children Exposed to Violence team meetings, peer supervision meetings, and team consultation meetings. Adherence to the

program models was monitored via quarterly treatment plans with measurable outcomes for each case.

METHOD

Design Overview

The design of this study was a quasi-experimental effectiveness trial comparing children in the Chelsea Health Center with similar children recruited from a different clinic within the MGH system serving a neighboring community. The intervention group received the full intervention as described above, whereas the study enrollees from the comparison site received community services and referrals as usual. The planned data collection was to assess child outcomes and contextual information at baseline, six, 12, 18, and 24 months. As discussed below, however, very few families were recruited into the study's comparison group. Study enrollment took place between September 2006 and March 2009.

Evaluation Eligibility Criteria

All children (ages 0–17) and parents/caregivers living in Chelsea who had been exposed to domestic or community violence and who were interested in taking part in the Chelsea Safe Start project were eligible for services and participation in the study. In addition, the child and parent/caregiver were required to understand either English or Spanish and to receive medical services from medical staff at MGH Chelsea.

When there was more than one child in the eligible age range, the target child for purposes of the research assessments was identified by the child's parent or caregiver.

Recruitment of the Treatment and Comparison Groups

To identify eligible children for the treatment group, Chelsea worked to generate internal and external referrals for the intervention. Chelsea centralized its recruitment process with all of the referrals for violence exposure flowing through the mental health unit intake coordinator. The coordinator screened the cases to confirm their eligibility and then contacted the Safe Start program staff with the referral. The referral was then discussed at the weekly multidisciplinary team meeting for children exposed to violence and assigned to a clinician to make the first contact with the family, explain the Safe Start services, confirm study eligibility, and introduce the study.

For the comparison group, an equivalent procedure for identifying potentially eligible cases was not feasible in the comparison health care center. Thus, the Safe Start program manager worked with the clinic staff at the comparison health care center to

identify families receiving services that may be eligible for the study. The Safe Start program manager periodically visited the comparison clinic to provide materials related to the study to the clinic staff, attended clinic staff meetings, and distributed brochures at the center in an attempt to identify families for the comparison group. When a potentially eligible family was identified, contact information would be passed to the Safe Start program manager who would contact the family to explain the study. As detailed below, however, these strategies did not yield an adequate sample for the study's comparison group.

Measures

The measures used in this study are described fully in Chapter Two of the main document (see http://www.rand.org/pubs/technical_reports/TR991-1.html). The measures were uniform across the national evaluation but prioritized within each site according to the relevance to the intervention under study. Given the nature of the Chelsea Safe Start intervention, the outcomes were prioritized as shown in Table 1.

Enrollment and Retention

For the treatment group, most of the referrals to the Chelsea Safe Start program were received from within the MGH health care center, with the bulk of them from pediatricians. Ultimately, the Safe Start program utilized a centralized intake process with a mental health unit intake coordinator receiving and screening all referrals for eligibility. Eligible families were discussed at the weekly multidisciplinary team meetings and then assigned to a clinician who made the first contact with the family. After initial meetings with the family, the Safe Start program coordinator introduced Safe Start to the family, obtained consent, and completed the baseline assessment.

Table 1
Prioritized Outcome Measures for Chelsea Safe Start

Primary Outcome Measures			
Domain	***Source/Measure***	***Age of Child***	***Respondent***
PTSD Symptoms	Trauma Symptom Checklist for Young Children	3–10 years	Caregiver
PTSD Symptoms	Trauma Symptom Checklist for Children	8–17 years	Child
Behavior/Conduct Problems	BITSEA and Behavior Problem Index	1–17 years	Caregiver
Caregiver-Child Relationship	BERS-2 (Family Involvement)	6–12 years	Caregiver
Caregiver-Child Relationship	BERS-2 (Family Involvement)	11–17 years	Child
Secondary Outcome Measures			
Domain	***Source/Measure***	***Age of Child***	***Respondent***
Depressive Symptoms	Children's Depression Inventory	8–17 years	Child
Behavior/Conduct Problems	Delinquency Items	11–17 years	Child
Social-Emotional Competence	BERS-2 (School Functioning, Affective Strengths)	6–12 years	Caregiver
Social-Emotional Competence	BERS-2 (School Functioning, Affective Strengths)	11–17 years	Child
Social-Emotional Competence	ASQ	0–2 years	Caregiver
Social-Emotional Competence	BITSEA and SSRS (Assertion and Self-Control)	1–12 years	Caregiver
Social-Emotional Competence	SSRS (Cooperation)	3–12 years	Caregiver
Social-Emotional Competence	SSRS (Cooperation, Assertion, Self-Control)	13–17 years	Child
Caregiver-Child Relationship	Parenting Stress Index	0–12 years	Caregiver
School Readiness/Performance	Woodcock-Johnson III	3–17 years	Child
Violence Exposure	Juvenile Victimization Questionnaire	0–12 years	Caregiver
Violence Exposure	Juvenile Victimization Questionnaire	11–17 years	Child
Tertiary Outcome Measures			
Domain	***Source/Measure***	***Age of Child***	***Respondent***
Background and Contextual Factors	Everyday Stressors Index	All	Caregiver
Violence Exposure	Caregiver Victimization Questionnaire	All	Caregiver

NOTE: ASQ = Ages and Stages Questionnaire, BERS-2 = Behavior and Emotional Rating Scales—2, BITSEA = Brief Infant-Toddler Social and Emotional Assessment, SSRS = Social Skills Rating System.

For the comparison group, staff at the comparison clinic introduced the study to eligible families. If they were interested and agreed, the family's contact information

was shared with the Safe Start program staff, who then contacted the family to confirm eligibility and enroll in the study.

According to data submitted on its Quarterly Activity Reports, Chelsea Safe Start enrolled 26 percent of the families referred to the intervention. The most common reasons that families did not enroll in the study included legal guardian–related issues, such as inability to locate the legal guardian (43 percent) or other legal guardian issues (17 percent). In addition, 19 percent of caregivers were either not interested or had no time to participate in the program. Comparable information about referrals to the comparison group was not available.

In Table 2, we present the number and percentage of all enrollees who were eligible for participation at each data collection time point. Chelsea program staff enrolled 82 families in the study and completed six-month research assessments for 85 percent of caregivers and 83 percent of children. For subsequent research assessments, Chelsea maintained these high retention rates, with 60 to 87 percent of the families retained, depending on the assessment point and type.

Table 2
Retention of Chelsea Enrollees Eligible to Participate in Assessments at Each Time Point

	Caregiver Assessment				Child Assessment			
	6 Months	12 Months	18 Months	24 Months	6 Months	12 Months	18 Months	24 Months
Intervention								
Received	61	49	27	19	50	42	23	20
Expected*	71	58	35	23	59	60	37	23
Retention Rate	86%	84%	77%	83%	85%	70%	62%	87%
Comparison								
Received	9	7	2	0	8	6	1	0
Expected*	11	10	3	0	11	10	3	0
Retention Rate	82%	70%	67%	0%	73%	60%	33%	0%
Overall								
Retention Rate	85%	82%	76%	83%	83%	69%	60%	87%

* The number of expected assessments for longer-term assessments differs from the number who entered the study because the field period for collecting data in this study ended in the fall of 2009, before all families entered the window of time for assessments at 12, 18 or 24 months.

Special Issues

The Chelsea Safe Start program experienced challenges engaging and retaining families with children exposed to violence. In the intervention group, despite offering food and other basic supports, the families referred to Safe Start often did not fully

engage in the program. The stress of their lives, including issues of economic and housing stability, made it difficult for them to consistently engage in the Safe Start program. Some families cycled in and out of services, making it difficult to provide the complete intervention model.

For the comparison group, the recruitment and retention difficulties were magnified, since specialized Safe Start services were not offered along with study participation. The staff at the comparison health care center was reportedly not invested in identifying potentially eligible families. Many caregivers were difficult to locate, either initially or after enrollment had occurred. For a more in-depth discussion, see Schultz et al. (2010).

Analysis Plan

First, we conducted descriptive analyses to summarize the sample characteristics: age, gender, race or ethnicity, the family income level, and the child's violence exposure at baseline. Because of the quasi-experimental design, there was a possibility of differences between the two groups (intervention and comparison) at baseline. We tested for differences in child and caregiver characteristics between intervention and comparison group children using t-tests and chi-square tests.

Because Chelsea was only able to enroll a small number of families in the comparison group (11), and attrition in later assessments resulted in very small numbers (nine comparison group families at six months and seven comparison group families at 12 months), we were only able to examine differences between the intervention and comparison groups at baseline using t-tests. Because of the lack of comparison group data, the primary analyses of the Chelsea data were comparisons of means over time within the intervention group using t-tests and chi-square tests. We examined outcomes using an intent-to-treat approach, which includes in analyses all families in an intervention grouping regardless of the amount of services received. Ideally, analyses would take into account the type and amount of services received to account for dosage variability. However, there were not enough families in this site's sample in order to proceed with type of analysis. Thus, the findings presented here on the entire intervention sample may obscure important subgroup differences by service dose received.

When conducting large numbers of simultaneous hypothesis tests (as we did in this study), it is important to account for the possibility that some results will achieve statistical significance simply by chance. The use of a traditional 95-percent confidence interval, for example, will result in one out of 20 comparisons achieving statistical

significance as a result of random error. We therefore adjusted for false positives using the False Discovery Rate (FDR) method (Benjamini and Hochberg, 1995). Our assessments of statistical significance were based on applying the FDR procedure separately to all of the primary, secondary, and tertiary outcome tests in this report using an FDR of 0.05. For instance, with five statistical tests conducted among the primary outcomes, this led to adopting a statistical significance cutoff of 0.01 for the within-intervention group comparison of changes from baseline to six months. In the discussion of results, we have also identified nonsignificant trends in the data, defined as those tests with p-values of less than the traditional 0.05 standard but not exceeding the threshold established using the FDR method to adjust for multiple significance tests. While these trends may suggest a practical difference that would be statistically significant with a larger sample size, they must be interpreted with caution because we cannot rule out that the difference was due to chance because of the multiple significance tests being conducted.

RESULTS

Baseline Descriptive Statistics

For the descriptive statistics, we provide the characteristics for the full enrolled sample at baseline. As seen in Table 3, the Chelsea baseline sample was composed of 76 percent males, with an average age of 8.1 years. About 40 percent of the children were 5 years of age or younger, with about one-fifth of children in the 6–8, 9–12, and 13–18 age ranges. More than one-half (55 percent) of the enrolled children were identified as Hispanic, with 16 percent white, three percent black, and 26 percent some other race or ethnicity. The majority (84 percent) of families had family incomes of less than $30,000, with 18 percent having family incomes of less than $5,000. According to the caregiver reports, children in the baseline sample had been exposed to an average of 3.1 types of violence in their lives prior to the baseline assessment. Most of the caregivers were the parent or guardian of the child (95 percent). As noted in the table, there was one statistically significant difference on these characteristics between the intervention and comparison groups at baseline. On average, children in the comparison group were older than the intervention group (13.1 versus 7.4 years).

In the sample of families retained at six months, the demographics were similar but with more females (41 percent). Because of the small sample size in the comparison group, it was not possible to compare the intervention and comparison groups in the six-month assessment sample on these demographic characteristics (data not shown).

Table 3
Chelsea Safe Start Sample Characteristics for Families in the Baseline Assessment Sample

	Combined		Intervention		Comparison		Test for Comparison (p-value)
Child Characteristics	***N***	***Mean***	***N***	***Mean***	***N***	***Mean***	
Age	82	8.1	71	7.4	11	13.1	<0.0001
CR Violence Exposure	64	3.0	61	2.8	3	6.3	0.02
SR Violence Exposure	23	4.8	15	5.4	8	3.6	0.25
Gender	***N***	***%***	***N***	***%***	***N***	***%***	
Male	49	59.8	42	59.2	7	63.6	0.08
Female	33	40.2	29	40.8	4	36.4	
Race/Ethnicity	***N***	***%***	***N***	***%***	***N***	***%***	
White	13	15.9	8	11.3	5	45.5	
Black	3	3.7	2	2.8	1	9.1	
Hispanic	45	54.9	45	63.4	0	0.0	
Other	21	25.6	16	22.5	5	45.5	
Caregiver Characteristics	***N***	***%***	***N***	***%***	***N***	***%***	
Family Income Level							
Less than $5,000	14	18.4	14	21.5	0	0.0	
$5,000–$10,000	21	27.6	17	26.2	4	36.4	
$10,001–$15,000	12	15.8	11	16.9	1	9.1	
$15,001–$20,000	10	13.2	9	13.8	1	9.1	
$20,001–$30,000	7	9.2	5	7.7	2	18.2	
More than $30,000	12	15.8	9	13.8	3	27.3	
Relationship to Child							
Parent-Guardian	76	95.0	67	97.1	9	81.8	0.03
Other Relationship	4	5.0	2	2.9	2	18.2	

NOTE: CR = Caregiver Report; SR = Child Self-Report. Percentages may not total 100 percent because of rounding.

Next, we examined the Chelsea sample at baseline on two outcomes (PTSD symptoms and parenting stress) to understand the level of severity on these indexes among families in the study. As shown in Table 4, caregivers reported baseline PTSD symptoms that fell in the clinical range for 38 percent of the children. For the caregiver-child relationship, 80 percent of the sample had total stress levels that fell in the clinical range, with 82 percent for boys and 76 percent for girls. For the different subscales, 61 percent of the sample had clinical levels on the parental distress subscale, 65 percent had clinical levels on the parent-child dysfunctional interaction subscale, and 60 percent had clinical levels on the difficult child subscale.

Table 4
Baseline Assessment Estimates for Chelsea Safe Start Families

	Combined		Boys		Girls	
CR PTSD Symptoms for Ages 3–10	*N*	*%*	*N*	*%*	*N*	*%*
Normal	21	53	12	46	9	64
Borderline	4	10	4	15	0	0
Significant	15	38	10	38	5	36
CR Total Parenting Stress for Ages 0–12	*N*	*%*	*N*	*%*	*N*	*%*
Parental Distress—Clinical	39	61	25	64	14	56
Parent-Child Dysfunctional Interaction—Clinical	42	65	28	70	14	56
Difficult Child—Clinical	39	60	24	60	15	60
Total Stress—Clinical	51	80	32	82	19	76

NOTE: CR = Caregiver Report.

We also examined differences between the intervention and control group at baseline for Chelsea's primary, secondary, and tertiary outcomes (see this report's appendix). Primary outcomes include PTSD, behavior problems, and the family involvement aspect of the caregiver-child relationship domain. The sample size for the comparison group was adequate to conduct statistical tests at baseline for only two of the primary outcomes (PTSD and behavior problems). There were no statistically significant differences at baseline between the intervention and comparison group in relation to either of these primary outcome variables (Table A.1).

Chelsea's secondary outcomes include depressive symptoms, conduct problems, social-emotional competence, the parenting stress aspect of the caregiver-child relationship domain, school readiness/performance, and the child's violence exposure. There were no statistically significant differences at baseline between the intervention and comparison groups for any of the secondary outcome variables with a large enough sample size to conduct the analysis (Table A.2).

Chelsea's tertiary outcomes include the background and contextual factor domain and the caregiver's violence exposure. There were no statistically significant differences at baseline between the intervention and comparison group in relation to any of the tertiary outcomes (Table A.3).

Uptake, Dosage, and Process of Care

As described fully in the process evaluation report (Schultz et al., 2010), Chelsea intervention services included a range of therapy options, as well as case management, multidisciplinary team involvement, advocacy, and other services. Tables 5a and 5b

show the type and amount of services received by the families assigned to the intervention group. The data displayed include services received by summing all time points reported by the program, with a maximum of 24 months of service provision.

As seen in Table 5a, 90 percent of Chelsea intervention families received some form of therapy. On average, families received more than ten sessions of therapy, with 34 receiving more than 20 sessions. Table 5a also provides information about the specific types of therapies. Around one-half of intervention families received child individual therapy (54 percent) and caregiver individual therapy (48 percent). The mean number of sessions was 10.3 for child individual therapy and 9 for caregiver individual therapy. Chelsea Safe Start intervention families also received dyadic therapy (39 percent) and family therapy (14 percent). On average, families received 3.9 sessions of dyadic therapy (ranging from one to 15 sessions) and 2.8 sessions of family therapy (ranging from one to 11 sessions). Families also received group therapy, with 31 percent attending child group therapy sessions, 23 percent attending caregiver group therapy sessions, and 21 percent attending group therapy sessions with both caregivers and children. Many of the families received case management services (55 percent), while some received advocacy services (32 percent) or had multidisciplinary team involvement (25 percent). Over two-thirds of intervention group families (68 percent) received a home visit as part of their Safe Start services.

Chelsea reported information on the reason that the services ended for 39 of the 71 intervention group families. In about three-quarters of these cases (74 percent), the services ended because the family discontinued their involvement in services in some way. In three cases, services ended because the family had satisfactorily completed the services. In two cases, the program elected to terminate sessions with a participating family. Because service-ending data were provided for only about one-half of families, these data are not likely a reliable description of the reason for service ending for all families.

Table 5a
Services Received by Chelsea Safe Start Intervention Families (Baseline Assessment Sample)

Service	Number with Service	Percentage with Service*	Range	Distribution	Mean	Median
Any Therapy	64	90%	1–110	1–5 25% 6–10 14% 11–20 27% >20 34%	19.6	2.5
Child Individual Therapy	38	54%	1–34	1–5 37% 6–10 24% 11–20 26% >20 13%	10.3	8
Caregiver Individual Therapy	34	48%	1–37	1–5 50% 6–10 21% 11–20 15% >20 15%	9.0	
Dyadic Therapy	28	39%	1–15	1–5 79% 6–10 14% 11–20 7%	3.9	2
Family Therapy	10	14%	1–11	1–5 80% 6–10 10% 11–20 10%	2.8	1
Child Group Therapy	22	31%	1–40	1–5 41% 6–10 32% 11–20 14% >20 14%	10.3	5
Caregiver Group Therapy	16	23%	1–21	1–5 56% 6–10 6% 11–20 31% >20 6%	7.8	4
Caregiver And Child Group Therapy	15	21%	1–13	1–5 67% 6–10 20% 11–20 13%	4.8	2.8
Case Management Services	39	55%	1–17	1–5 82% 6–10 13% 11–20 5%	3.3	1.4
Multidisciplinary Team Meetings	18	25%	1–4	1–5 100%	1.7	1
Advocacy	23	32%	1–10	1–5 91% 6–10 9%	2.3	1
Home Visits	48	68%	1	1–5 100%	1.0	1

* The denominator is the 71 intervention group families with a follow-up Family Status Sheet at the six-month assessment point.

NOTE: Percentages may not total 100 percent because of rounding.

Table 5b shows the services received between the baseline and six-month assessments for the 61 intervention families who participated in at least the six-month follow-up research assessment, and thus are part of our analytic sample for examination

of outcomes. Overall, the majority of families (89 percent) received some form of therapy. The number of therapy sessions ranged from one to 50, with a mean of 12.1 therapy sessions. Nearly one-half (48 percent) of the families received child individual therapy sessions, with an average of 6.1 sessions per family. More than one-third (39 percent) of families received caregiver individual therapy, with about one-half of these receiving five or fewer sessions. Intervention families also took part in dyadic (38 percent) and family (10 percent) therapy sessions. Some of Chelsea's intervention families participated in child group therapy (23 percent), caregiver group therapy (18 percent), and caregiver and child group therapy (23 percent) sessions. Chelsea also provided case management services (44 percent) and advocacy services (26 percent). Chelsea's multidisciplinary team met regarding nearly one-fifth of the families (18 percent), with an average of 1.4 meetings per family.

Chelsea program staff reported why services ended for only a handful of families in the six-month analysis sample. For all of these, services ended because the family dropped out or the program lost contact with the family.

Table 5b
Six-Month Services Received by Chelsea Safe Start Intervention Families in the Six-Month Assessment Sample

Service	Number with Service	Percentage with Service*	Range	Distribution	Mean	Median
Any Therapy	54	89%	1–50	1–5 28% 6–10 24% 11–20 30% >20 19%	12.1	1.4
Child Individual Therapy	29	48%	1–24	1–5 52% 6–10 28% 11–20 17% >20 3%	6.1	4.5
Caregiver Individual Therapy	24	39%	1–19	1–5 58% 6–10 25% 11–20 17%	6.0	3.7
Dyadic Therapy	23	38%	1–9	1–5 78% 6–10 22%	3.1	1.6
Family Therapy	6	10%	1–9	1–5 40% 6–10 20% 11–20 40%	3.3	1.0
Child Group Therapy	14	23%	1–17	1–5 29% 6–10 50% 11–20 21%	7.9	7.3
Caregiver Group Therapy	11	18%	1–14	1–5 55% 6–10 27% 11–20 18%	6.4	4.5
Caregiver And Child Group Therapy	14	23%	1–10	1–5 64% 6–10 36%	4.3	3.0
Case Management Services	27	44%	1–11	1–5 93% 6–10 4% 11–20 4%	2.6	1.5
Multidisciplinary Team Meetings	11	18%	1–2	1–5 100%	1.4	1.0
Advocacy	16	26%	1–8	1–5 94% 6–10 6%	1.6	1.0
Home Visits	43	70%	1–1	1–5 100%	1.0	1.0

* The denominator is the 61 intervention group families in the six-month assessment sample.
NOTE: Percentages may not total 100 percent because of rounding.

Outcomes Analysis

As noted above, the small sample sizes limited the Chelsea analyses to testing whether there were statistically significant chances in mean scores within the intervention group over time. Table 6 shows the mean change between baseline and six months and between baseline and 12 months for Chelsea's primary outcomes. T-tests were conducted within the intervention group when the sample size at both assessment points allowed. The analyses revealed one statistically significant within-group

difference at six months. Between baseline and the six-month follow-up, caregivers in the intervention group reported significantly fewer total child behavior problems. At 12 months, there were three statistically significant differences within the intervention group. Both the caregiver's and child's report of PTSD symptoms decreased significantly between baseline and the 12-month assessment. The statistically significant reduction in the child's behavior problems persisted at 12 months, with caregivers reporting significantly fewer behavior problems at 12 months compared to the baseline.

Table 6
Changes in Intervention Group Means for Primary Outcome Variables Between Baseline and Six- and 12-Month Assessments

Primary Outcome	Within-Family Mean Changes at Six Months[a]			Within-Family Mean Changes at 12 Months[a]		
	N	Mean		N	Mean	
PTSD Symptoms						
CR Child PTSD Symptoms for Ages 3–10	37	–3.70		28	–6.18	*
SR Child PTSD Symptoms for Ages 8–12	25	–2.68		18	–4.94	*
Behavior/Conduct Problems						
CR Child Behavior Problems for Ages 1–18	59	–0.32	*	48	–0.55	*
Caregiver-Child Relationship						
CR Family Involvement for Ages 6–12	26	0.42		20	1.95	
SR Family Involvement for Ages 11–18	12	1.42		8		

[a] This column reflects within-family mean changes between the baseline and six- and 12-month scores. * indicates a significant paired t-test of differences over time.
NOTE: CR = Caregiver Report; SR = Child Self-Report. # indicates a nonsignificant trend in the t-test ($p<0.05$ but does not meet the FDR correction threshold). Mean change estimates are not shown when the group size is fewer than ten, and comparisons are not shown when the group size is fewer than ten for either group.

Chelsea's secondary outcomes include depressive symptoms, conduct problems, social-emotional competence, caregiver-child relationship, school readiness/performance, and the child's violence exposure. For secondary outcomes, there were several statistically significant differences within the intervention group between baseline and the follow-up assessment points. At the six-month assessment, children reported significantly fewer depressive symptoms and delinquency problems. Within the social-emotional competence domain, caregivers reported significantly higher levels of assertion. In the caregiver-child relationship domain, caregivers reported significantly lower levels of parental distress, parent-child dysfunction, and total parental stress. There was also a nonsignificant downward trend for the difficult child measure at six months. Between baseline and the six-month follow-up, both caregivers and children in the intervention group reported significantly fewer total

victimization experiences and fewer maltreatment, assault, and witnessing violence experiences. These decreases in reporting of victimization were expected because of different reference periods for the baseline assessment (where the reference period is lifetime) and the six-month assessment (when the reference period is the prior six months).

For Chelsea's secondary outcomes, there were also some statistically significant differences within the intervention group at the 12-month assessment point. At 12 months, children continued to report significantly fewer depressive symptoms and had better scores on the passage comprehension test. In the caregiver-child relationship domain, caregivers reported lower scores on the parent-child dysfunction scale and total stress scale. For the 12-month follow-up assessment, there were similar significant differences within the intervention group in the caregiver's report of violence exposure, which would be expected given the different reference periods for the baseline and 12-month assessments.

Chelsea's tertiary outcomes included the background and contextual factor domain and the caregiver's violence exposure. At the six-month assessment point, there were statistically significant decreases for the intervention group in the caregiver's report of personal problems, domestic violence experiences, and non–domestic violence experiences. At 12 months, the decreases in caregiver domestic violence and non–domestic violence victimization experiences persisted. These differences in the caregiver's victimization experiences are expected, given the different reference periods for the baseline and follow-up assessments.

Table 7
Changes in Intervention Group Means for Secondary Outcome Variables Between Baseline and Six- and 12-Month Assessments

Secondary Outcome	Within-Family Mean Changes at Six Months[a]			Within-Family Mean Changes at 12 Months[a]		
	N	Mean		N	Mean	
Depressive Symptoms						
SR Child Depressive Symptoms for Ages 8–18	20	–5.00	*	13	-5.38	*
Behavior/Conduct Problems						
SR Teen Delinquency for Ages 11–18	12	–1.33	*	8		
Social-Emotional Competence						
CR Child Affective Strengths for Ages 6–12	26	–0.35		20	0.90	
SR Child Affective Strengths for Ages 11–18	12	1.00		8	0.88	
CR Child School Functioning for Ages 6–12	25	1.48		19	0.58	
SR Child School Functioning for Ages 11–18	10	0.40		8	0.75	
CR Child Assertion for Ages 1–12	52	0.35	*	41	0.26	
CR Child Self-Control for Ages 1–12	52	0.22		41	0.11	
CR Child Cooperation for Ages 3–12	36	0.64		25	1.92	
Caregiver-Child Relationship						
CR Parental Distress for Ages 0–12	53	–4.64	*	41	–4.88	
CR Parent-Child Dysfunction for Ages 0–12	54	–3.06	*	42	–2.02	*
CR Difficult Child for Ages 0–12	54	–2.67	#	42	–2.60	
CR Total Parental Stress for Ages 0–12	53	–9.92	*	41	–9.73	*
School Readiness/Performance						
Letter Word Identification for Ages 3–18	39	2.79		26	–8.65	
Passage Comprehension for Ages 3–18	38	–1.92		27	–5.26	*
Applied Problems for Ages 3–18	44	2.05		29	–2.17	
Violence Exposure						
CR Total Child Victimization Experiences for Ages 0–12	53	–1.91	*	41	–2.00	*
CR Child Maltreatment for Ages 0–12	52	–0.65	*	41	–0.66	*
CR Child Assault for Ages 0–12	52	–0.63	*	41	–0.68	*
CR Child Sexual Abuse for Ages 0–12	53	–0.02		41	0.00	
CR Child Witnessing Violence for Ages 0–12	52	–0.85	*	42	–1.00	*
SR Total Child Victimization Experiences for Ages 11–18	12	–4.17	*	8		
SR Child Maltreatment for Ages 11–18	12	–1.08	*	8		
SR Child Assault for Ages 11–18	12	–1.08	*	8		
SR Child Sexual Abuse for Ages 11–18	12	–0.17		8		
SR Child Witnessing Violence for Ages 11–18	12	–1.83	*	8		

[a] This column reflects within-family mean changes between the baseline and six-month scores. * indicates a significant paired t-test of differences over time.
NOTE: CR = Caregiver Report; SR = Child Self-Report. # indicates a nonsignificant trend in the t-test ($p<0.05$ but does not meet the FDR correction threshold). Mean change estimates are not shown when the group size is fewer than ten, and comparisons are not shown when the group size is fewer than ten for either group.

Table 8
Changes in Intervention Group Means for Tertiary Outcome Variables Between Baseline and Six- and 12-Month Assessments

Tertiary Outcome	Within-Family Mean Changes at Six Months[a]			Within-Family Mean Changes at 12 Months[a]		
	N	Mean		N	Mean	
Background and Contextual Factors						
CR Caregiver Resource Problems	61	–0.38		49	–0.90	
CR Caregiver Personal Problems	61	–2.21	*	49	–1.86	
Violence Exposure						
CR Caregiver Total Number of Traumatic Experiences	60	–0.08		48	0.00	
CR Caregiver Experience of Any Non-DV Traumas[b]	61	–0.16	*	49	–0.16	*
CR Caregiver Experience of Any Domestic Violence[b]	61	–0.20	*	49	-0.27	*

[a] This column reflects within-family mean changes between the baseline and six-month scores. * indicates a significant paired t-test of differences over time.
[b] This outcome is a categorical variable, and the unadjusted within-family mean change is a change in proportion.
NOTE: CR = Caregiver Report; DV = domestic violence. # indicates a nonsignificant trend in the t-test ($p<0.05$ but does not meet the FDR correction threshold). Mean change estimates are not shown when the group size is fewer than ten, and comparisons are not shown when the group size is fewer than ten for either group.

CONCLUSIONS

The Chelsea Safe Start program developed an intervention with group therapy, home visitation, and case coordination components to improve outcomes for children (ages 17 and younger) exposed to violence. The program attempted to conduct a quasi-experimental trial comparing children in the Chelsea Health Center with similar children recruited from a different clinic in a neighboring community. While Chelsea program staff enrolled 71 families in the intervention group, with 86 percent of them retained at the six-month assessment, they enrolled only 11 families in the comparison group and retained only nine of them for the six-month assessment.

The participants in the study had substantial violence exposure, with caregivers reporting that children had been exposed to an average of 3.1 types of violence in their lives prior to the baseline assessment. Children (ages 11 and older) reported an average of 4.8 types of violence. At baseline, families enrolled in the study were experiencing PTSD symptoms and parenting stress. Thirty-eight percent of enrolled families reported baseline child PTSD symptoms that fell in the significant range, and 80 percent had levels of parental stress that fell in the clinical range. Chelsea's tailored approach to services meant that families in the intervention group received different types of therapy depending on the circumstances. Overall, 89 percent of Chelsea's families in the six-month analysis sample received some form of therapy. On average, these intervention families received 12.1 therapy sessions. Chelsea's case manager averaged

2.6 contacts per family to provide case management services to the 44 percent of intervention group families who received case management.

The lack of a comparison group limited the analyses to testing whether there were statistically significant changes in mean scores over time within the intervention group only. Caregivers reported fewer child behavior problems (six and 12 months, fewer PTSD symptoms (12 months), higher levels of assertion (six months), lower levels of parental distress (six months), parent-child dysfunction (six and 12 months), and total parental stress (six months), as well as fewer personal problems (six months) as compared to the baseline. Children in the intervention group also reported significantly fewer PTSD (12 months) and depressive symptoms (six and 12 months), as well as fewer delinquency problems (six months) compared to the baseline. Although it appears that the intervention group families improved on a number of dimensions, it was not possible to draw conclusions about the impact of the program because of the lack of a comparison group to examine the difference in outcomes over time. Nonetheless, with its Safe Start program Chelsea was able to coordinate care for children exposed to violence and formalize its group therapy options in response to family needs. Overall, the Chelsea Safe Start model requires further testing with a comparison group to determine whether the improvements in the intervention group can be attributed to participation in the intervention.

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CHELSEA OUTCOMES APPENDIX

Table A.1
Comparison of Means for Chelsea Primary Outcome Variables over Time

Primary Outcome		Baseline		Six Months		12 Months		18 Months		24 Months	
		N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
PTSD Symptoms											
CR Child PTSD Symptoms for Ages 3–10	Intervention	46	47.09	37	42.84	33	42.09	21	42.48	12	36.75
	Control	2		3		2		0		0	
SR Child PTSD Symptoms for Ages 8–12	Intervention	30	10.77	25	8.20	24	7.00	11	4.18	8	5.88
	Control	10	7.50	8	5.50	5	4.20	1		0	
Behavior/Conduct Problems											
CR Child Behavior Problems for Ages 1–18	Intervention	69	0.34 #	59	0.01	49	–0.16	27	–0.07	19	–0.25
	Control	11	0.97	9	0.49	7	0.51	2		0	
Caregiver-Child Relationship											
CR Family Involvement for Ages 6–12	Intervention	31	21.10	26	21.65	25	22.36	15	22.07	15	21.20
	Control	3		3		2		0		0	
SR Family Involvement for Ages 11–18	Intervention	15	21.13	12	23.25	11	22.82	5	22.80	6	19.00
	Control	8	20.63	5	19.80	4		1		0	

NOTES: CR = Caregiver Report; SR = Child Self-Report.
* indicates statistically significant (p-value<FDR significance criterion); # indicates nonsignificant trend (p<0.05 and >FDR significance criterion). Data are not shown for outcomes when the cell size is fewer than five for the group. Comparisons were not tested when the group size was fewer than ten for either group.

Table A.2
Comparison of Means for Chelsea Secondary Outcome Variables over Time

Secondary Outcome		Baseline		Six Months		12 Months		18 Months		24 Months	
		N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
Depressive Symptoms											
SR Child Depressive Symptoms for Ages 8–18	Intervention	27	12.19	23	7.78	20	6.251	11	7.55	7	5.29
	Control	10	8.20	8	8.25	5	8.20	1		0	
Behavior/Conduct Problems											
SR Teen Delinquency for Ages 11–18	Intervention	15	1.87	12	0.17	11	0.45	5	0.20	6	2.50
	Control	8	4.13	5	0.80	4		1		0	
Social-Emotional Competence											
CR Child Affective Strengths for Ages 6–12	Intervention	31	15.13	26	14.85	25	15.40	15	14.67	15	14.53
	Control	3		3		2		0		0	
SR Child Affective Strengths for Ages 11–18	Intervention	15	14.80	12	15.75	11	15.73	5	16.40	6	13.50
	Control	8	15.13	5	13.00	4		1		0	
CR Child School Functioning for Ages 6–12	Intervention	31	18.26	25	20.44	24	19.00	14	19.50	15	18.87
	Control	2		2		2		0		0	
SR Child School Functioning for Ages 11–18	Intervention	15	22.20	10	22.60	11	21.73	5	23.00	6	20.50
	Control	8	18.88	5	20.20	4		1		0	
CR Child Personal-Social Competence for Ages 0–2	Intervention	2		0		0		0		0	
	Control	0		0		0		0		0	

Table A.2—continued

Secondary Outcome		Baseline		Six Months		12 Months		18 Months		24 Months	
		N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
CR Child Assertion for Ages 1–12	Intervention	60	–0.57	52	–0.28	42	–0.31	25	–0.29	17	–0.45
	Control	3		3		2		0		0	
CR Child Self-Control for Ages 1–12	Intervention	60	–0.18	52	0.01	42	–0.09	25	–0.24	17	–0.32
	Control	3		3		2		0		0	
CR Child Cooperation for Ages 3–12	Intervention	47	9.19	38	9.71	31	10.55	20	8.85	14	9.36
	Control	3		3		2		0		0	
SR Child Assertion for Ages 13–18	Intervention	9	11.11	6	10.50	5	13.00	2		1	
	Control	8	12.50	5	11.60	4		1		0	
SR Child Self-Control for Ages 13–18	Intervention	9	9.89	6	12.50	5	14.20	2		1	
	Control	8	9.00	5	12.80	4		1		0	
SR Child Cooperation for Ages 13–18	Intervention	9	14.89	6	16.17	5	17.80	2		1	
	Control	8	14.13	5	13.80	4		1		0	
Caregiver-Child Relationship											
CR Parent Distress for Ages 0–12	Intervention	61	36.33	53	31.74	42	31.71	25	33.44	18	29.33
	Control	3		3		2		0		0	
CR Parent-Child Dysfunction for Ages 0–12	Intervention	62	27.95	54	25.02	42	26.43	25	26.80	18	25.56
	Control	3		3		2		0		0	
CR Difficult Child for Ages 0–12	Intervention	62	33.85	54	31.30	42	32.14	25	32.08	18	29.61
	Control	3		3		2		0		0	

Table A.2—continued

Secondary Outcome		Baseline		Six Months		12 Months		18 Months		24 Months	
		N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
CR Total Parenting Stress for Ages 0–12	Intervention	61	97.90	53	88.30	42	90.29	25	92.32	18	84.50
	Control	3		3		2		0		0	
School Readiness/Performance											
Letter Word Identification for Ages 3–18	Intervention	51	–6.59	45	–7.40	34	–3.68	20	1.25	15	5.47
	Control	10	–3.10	7	–10.00	5	–12.60	0		0	
Passage Comprehension for Ages 3–18	Intervention	54	–11.98	44	–12.07	36	–12.94	21	–7.24	16	–14.81
	Control	11	–26.36	8	–17.25	6	–34.00	0		0	
Applied Problems for Ages 3–18	Intervention	58	–13.22	46	–10.63	33	–12.18	22	–7.82	15	–5.00
	Control	11	–21.45	8	–21.38	6	–36.33	1		0	
Violence Exposure											
CR Total Child Victimization Experiences for Ages 0–12	Intervention	61	2.84	54	0.72	42	0.62	25	0.60	16	0.69
	Control	3		3		2		0		0	
CR Child Maltreatment for Ages 0–12	Intervention	61	0.84	53	0.21	42	0.21	25	0.20	17	0.18
	Control	3		3		2		0		0	
CR Child Assault for Ages 0–12	Intervention	61	0.79	53	0.09	42	0.12	25	0.08	17	0.12
	Control	3		3		2		0		0	
CR Child Sexual Abuse for Ages 0–12	Intervention	61	0.05	54	0.00	42	0.00	25	0.04	17	0.00
	Control	3		3		2		0		0	
CR Child Witnessing Violence for Ages 0–12	Intervention	62	1.23	52	0.29	42	0.07	23	0.04	15	0.13
	Control	2		3		1		0		0	

Table A.2—continued

Secondary Outcome		Baseline		Six Months		12 Months		18 Months		24 Months	
		N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
SR Total Child Victimization Experiences for Ages 11–18	Intervention	15	5.40	12	1.17	11	1.82	5	1.20	6	0.50
	Control	8	3.63	5	0.40	4		1		0	
SR Child Maltreatment for Ages 11–18	Intervention	14	1.14	12	0.08	10	0.40	5	0.20	6	0.17
	Control	8	0.88	5	0.00	4		1		0	
SR Child Assault for Ages 11–18	Intervention	15	1.47	12	0.25	10	0.20	5	0.60	6	0.00
	Control	8	1.13	5	0.20	4		1		0	
SR Child Sexual Abuse for Ages 11–18	Intervention	15	0.13	12	0.00	11	0.00	5	0.00	6	0.00
	Control	8	0.25	5	0.00	4		1		0	
SR Child Witnessing Violence for Ages 11–18	Intervention	15	2.53	12	0.67	11	1.09	4	0.25	5	0.20
	Control	7	1.43	5	0.20	4		1		0	

NOTES: CR = Caregiver Report; SR = Child Self-Report. Data are not shown for outcomes when the cell size is fewer than five for the group. Comparisons were not tested when the group size was fewer than ten for either group.

Table A.3
Comparison of Means for Chelsea Tertiary Outcome Variables over Time

Tertiary Outcome		Baseline		Six Months		12 Months		18 Months		24 Months	
		N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
Background and Contextual Factors											
CR Caregiver Resource Problems	Intervention	71	14.76	61	13.90	49	13.37	27	14.59	18	11.72
	Control	11	15.27	9	13.33	7	13.71	2		0	
CR Caregiver Personal Problems	Intervention	71	24.75 #	61	22.21	49	22.96	27	22.41	18	21.72
	Control	11	28.55	9	25.56	7	26.29	2		0	
Violence Exposure											
CR Caregiver Total Number of Traumatic Experiences	Intervention	70	0.16	61	0.08	49	0.10	27	0.04	18	0.11
	Control	11	0.36	9	0.22	7	0.00	2		0	
CR Caregiver Experience of Any Non-DV Trauma	Intervention	71	0.25	61	0.08	49	0.04	27	0.00	19	0.00
	Control	11	0.27	9	0.11	7	0.00	2		0	
CR Caregiver Experience of Any DV	Intervention	71	0.34	61	0.15	49	0.06	27	0.00	19	0.00
	Control	11	0.27	9	0.11	7	0.14	2		0	

NOTES: CR = Caregiver Report; DV = domestic violence.
* indicates statistically significant (p-value<FDR significance criterion); # indicates nonsignificant trend (p<0.05 and >FDR significance criterion).
Data are not shown for outcomes when cell size is fewer than five for the group. Comparisons were not tested when the group size was fewer than ten for either group.