

PREDICTORS OF STUDY RETENTION FROM A MULTISITE STUDY OF INTERVENTIONS FOR CHILDREN AND FAMILIES EXPOSED TO VIOLENCE

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Evaluation of interventions for children exposed to violence is critical for informing dissemination of effective services nationally, but retention rates in such studies are typically low, jeopardizing intent-to-treat analytic approaches. We examine predictors of retention (demographics, violence exposure, child mental health, caregiver demographics, and engagement in intervention) in a large multisite national study of interventions for children exposed to violence. Our analyses found that families were more likely to be retained in the study at 6 months if caregivers rated their own physical health as poor or fair, the child experienced higher levels of maltreatment, or the family was assigned to the intervention group within the study. In models limited to those families in the study's intervention group, only receipt of services was significantly related to study retention. Methods with which to increase retention in family therapy programs for at-risk families are discussed. © 2013 Wiley Periodicals, Inc.

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Over the past several decades, understanding of the prevalence and harmful consequences of children's exposure to violence has grown (English, 1998; Price & Maholmes, 2009; Osofsky, 1995). In 2010, local child protective service agencies nationwide reported that 695,000 children were victims of maltreatment including abuse and neglect (U.S. Department of Health and Human Services, 2011). Yet this figure captures only the subset of child maltreatment cases that was reported to child protection agencies and was found to be substantiated after investigation. Survey estimates of the prevalence of past-year violence, crime, and abuse exposure, including witnessing family and community violence, in U.S. children are as high as 60% (Finkelhor, Turner, Ormrod, & Hamby, 2009). Children exposed to violence as either direct victims or witnesses experience a variety of negative consequences (Kitzmann, Gaylord, Holt, & Kenny, 2003), such as attachment disorders, conduct problems, posttraumatic stress disorder (PTSD), delinquency, and adult criminal offending and violence (Graham-Bermann, Lynch, Banyard, Devoe, & Halabu, 2007; Schuck & Widom, 2005).

Despite a clear need for intervention, many children exposed to violence do not receive services to address its consequences (National Institute of Child Health and Human Development, 2002), and many programs that are in place to serve troubled families are not known to be effective (Snell-Johns, Mendez, & Smith, 2004). Unfortunately, little rigorous empirical evidence currently exists about the effectiveness of therapeutic interventions to prevent or treat children's exposure to violence (McWhirter, 2011). Interventions that have been tested have largely been examined under ideal, tightly controlled conditions (e.g., Cohen, Deblinger, Mannarino, & Steer, 2004; Kolko, 1996; Lieberman, Van Horn, & Ghosh Ippen, 2005). The extent to which they are effective in community settings is unknown. Thus, more research is needed in order to identify trauma-focused interventions that can be delivered successfully by community-based organizations. Although this work is beginning (e.g., Jaycox et al., 2011), field trials of promising practices are very challenging, and efforts to identify ways to overcome these challenges are needed.

One key factor that impedes rigorous evaluation of community-based interventions for children exposed to violence is attrition of study participants (Koverola, Murtaugh, Connors, Reeves, & Papas, 2007). In fact, available literature suggests that children and families most in need of mental health services are the least likely to engage in them and the most likely to drop out of programs early (Kazdin, 1996; Snell-Johns et al., 2004). Family distress and child maltreatment were found to be related to both refusal to participate in research studies and early drop out from treatment programs (Lau & Weisz, 2003; Weinberger, Tublin, Ford, & Feldman, 1990).

Researchers have put thoughtful efforts into designing and testing methods for encouraging service and research participation among vulnerable families (Ingoldsby, 2010; McKay, McCadam, & Gonzales, 1996; Snell-Johns et al., 2004). While tests of engagement-enhancing interventions have shown promising effects in research trials, the average dropout rate from family-based therapies remains in the 30%-60% range, unchanged from 30 years ago (Fernandez & Eyberg, 2009; McKay & Bannon, 2004). Moreover, it is unclear whether dropout from effectiveness studies has to do with participation in the research study, or participation in services, or a combination of the two.

Although a substantial body of literature has explored the correlates of dropout from psychotherapy, only a small proportion of these studies have examined dropout from programs with child participants (Chasson, Vincent, & Harris, 2008). Research on dropout from treatment examines correlates of dropout at the program and family levels. Program level characteristics that are often related to program engagement include relevance of program content to needs or goals of families in the community served by the intervention

(Gottfredson et al., 2005; Gross, Wrenetha, & Fogg, 2001), competence of staff in relating to target families (Thompson, Bender, Lantry, & Flynn, 2007), and logistical barriers to participation such as transportation, child care, and scheduling conflicts. Studies of family level correlates of drop out from therapy have found that younger parents, low income families, disorganized families, single mothers, and members of racial/ethnic minority groups are more likely to drop out of intervention services (Ingoldsby, 2010; Pellerin, Costa, Weems, & Dalton, 2010; Pérez, Ezpeleta, & Domenech, 2007.) However, these findings are not consistent across all studies (Koverola et al., 2007; Fernandez & Eyberg, 2009; Graham-Bermann et al., 2007).

Another important family-level predictor of intervention engagement is symptom severity. While it appears reasonable to assume that symptom severity or indication of need for treatment would be linked to greater receipt of treatment because higher needs families would be offered more services and receive more support, the results across studies are mixed. Some studies measuring the link between symptom severity (i.e., child behavior problems, parental stress) and intervention uptake find that the most distressed families do not sustain connections to service agencies and drop out early (Kazdin, 1990; Lau & Weisz, 2003; Pellerin et al., 2010; Prinz & Miller, 1994). Other studies report that symptom severity is either unrelated to drop out (Burns et al., 1995; Pina, Silverman, Weems, Kurtines, & Goldman, 2003) or related to increased engagement in interventions (Burns, 1991; Dore, Wilkinson, & Sonis, 1992; Kendall & Sugarman, 1997).

Researchers in this field must strive to find ways to reduce attrition, as it substantially undermines the generalizable knowledge that can be gained from research efforts, as well as undercutting the benefits families might experience from interventions. Attrition from studies compromises random assignment, reduces external validity, and weakens statistical power of research designs, further impeding the ability to draw reliable conclusions about the effectiveness of programs for addressing violence exposure in children (Drew, Hardman, & Hart, 1996). Most previous studies of retention in community-based interventions for children and their families have been conducted in the context of small trials of specific interventions. Thus, they measured a limited range of participant characteristics and included a small research sample, reporting differences in means between completers and noncompleters. These efforts have been unable to test a wide array of potential predictors of retention simultaneously. The present study seeks to improve on these previous studies with a larger sample drawn from multiple program sites across the country to advance the understanding about factors related to retention. This sample allows multivariate analyses that have been untested in previous work, with a focus on family-level variables.

Current Study

Data for the current study are drawn from the multiyear, multisite, national evaluation of 15 sites funded under the Office of Juvenile Justice and Delinquency Prevention's Safe Start Promising Approaches (SSPA) initiative (Hyde, Kracke, Jaycox, & Schultz, 2008; Jaycox et al., 2011; Schultz et al., 2010). SSPA is a tiered approach to fulfill the dual goals of implementing evidence-based or promising programs for children exposed to violence, and assessing how they work in community settings. The national evaluation of SSPA sought to test the effectiveness of the individual programs in improving outcomes for children exposed to violence (Jaycox et al., 2011).

The SSPA initiative began data collection for most programs in 2005 (some in 2006) and continued until 2010. Over this study period, recruitment at most sites fell far below

expectations, as detailed thoroughly in earlier reports (Jaycox et al., 2011; Schultz et al., 2010). While retention of participants was also low overall, it was typical for studies of this type (Attride-Stirling, Davis, Farrell, Groark, & Day, 2004; Gross et al., 2001). Across sites, 40% of the participants who completed the baseline assessment dropped out of the study before completing the first follow-up assessment at 6 months, with a good deal of variation among sites. The result of recruitment and retention problems was loss of statistical power and related inability to draw conclusions about the effect of individual programs in the overall SSPA evaluation (see Jaycox et al., 2011).

This study takes advantage of the large sample of 1,085 participants provided by the pooled SSPA data to examine the characteristics of participants who were lost from the study at the 6-month follow-up point. This is an unusually large sample in research of this type and enables the testing of more complex relationships between participant characteristics and study retention than has been possible in other studies. Our study aims to identify the key demographic, psychosocial, and behavioral predictors of study retention for interventions that focus on children exposed to violence.

METHODS

Setting

The SSPA sites operated independently in a variety of settings (universities, hospitals, governmental agencies, and community-based family-serving agencies). Each designed its own programming, but were required to (a) serve children younger than 18 years of age who had been exposed to violence and their families and (b) offer a treatment component that was theory- or evidence-based. Few restrictions on program content meant that programming differed widely from site to site. However, all sites provided therapy to children, caregivers, or both, with eight programs providing a form of Child-Parent Psychotherapy (Lieberman & Inman, 2009; Lieberman et al., 2005), often in addition to other services. Nearly all sites also offered case management. See Schultz et al. (2010) for a thorough description of program structure and services provided at each site.

The SSPA outcome evaluation (Jaycox et al., 2011) focused on child posttraumatic stress symptoms, behavior problems, violence exposure over time, social-emotional competence, and positive parent-child relationships. A rigorous controlled evaluation design was developed for each site (randomized control group or a quasi-experimental comparison group) to test whether program participation influenced these outcomes. Assessment measures and procedures related to conducting random assignment and other research protocols were designed by the national evaluation team. However, staff at each site was responsible for recruitment and retention of participants as well as all data collection tasks, under the supervision of the national evaluation team. The research design called for enrollees to participate in research assessments every 6 months for 2 years postbaseline. The evaluation collected caregiver reports of family/caregiver and child outcomes, as well as child self-report on select measures from youth 8 years of age and older. Here, we analyze only caregiver reports, because most children were too young to provide self-report data. The current study examines retention at the first wave of follow-up at 6-months postbaseline.

In total, 1,741 families enrolled in the national evaluation of SSPA. Two of the 15 sites were excluded from these analyses as well as 60 participants who completed a baseline

Table 1. Description of Included SSPA Sites

Site	N	% Retained	% Hispanic	% White	% African American	Child age M (SD)	% Below poverty line
Site 1	120	70	80	10	15	4.4 (1.6)	89
Site 2	80	85	68	36	5	8.4 (4.5)	84
Site 3	66	56	20	26	53	5.3 (1.5)	89
Site 4	36	56	8	53	44	2.2 (1.0)	94
Site 5	163	63	4	86	11	6.4 (2.6)	60
Site 6	123	45	37	33	59	4.8 (3.2)	92
Site 7	33	36	30	45	6	4.0 (1.8)	63
Site 8	78	36	76	12	15	3.7 (1.4)	82
Site 9	159	53	38	43	42	4.3 (2.2)	58
Site 10	56	36	48	23	16	8.3 (3.5)	86
Site 11	104	93	69	24	8	6.6 (2.3)	77
Site 12	53	64	43	25	17	4.8 (2.0)	33
Site 13	14	50	7	86	7	2.8 (0.9)	85
Total	1085	60	43	38	25	5.3 (3.0)	75

Note. SSPA = Safe Start Promising Approaches; M = mean; SD = standard deviation.

assessment at enrollment but for whom no attempt was made to conduct the follow-up assessment. One site was eliminated because site staff did not follow the study protocol. A second site was excluded to avoid disproportionate influence because it was too dissimilar to other sites both in size (greater than 400 participants) and in programming (a universal, school-based intervention). Since funding was curtailed near the end of the data collection period, follow-up assessments were not pursued for 60 participants across multiple sites. Finally, 74 families whose children were younger than 1 year old were dropped because this group was only asked to respond to a small subset of the full measures battery. The sample for the current study includes 1,085 families, 649 (60%) of whom were retained in the study at 6 months.

A description of the population at each of the 13 included sites is displayed in Table 1. While some sites offered more than one intervention (e.g., one program for young children, and a different program for older children), data are analyzed at the site level. Sites varied in recruited sample size and child age as well as demographic characteristics of the caregivers. Table 1 also shows the range of recruitment totals and retention rates across sites.

Participants

Families of children exposed to violence were referred to SSPA via locally determined referral networks such as social service agencies. Families were often referred following an adverse event such as an emergency room visit or arrest of a household member. Most of the caregivers in the study were not direct perpetrators of violence against their children, although many may have failed to protect children from abuse or from witnessing violence in the home. Data identifying the perpetrators of violence against the children in the study were not collected.

Children involved in this study spanned a broad age range from 1 to 17 years of age. The majority of SSPA programs, however, focused on younger children; 50% of the children in this sample were between 3 and 7 years of age. Only 16% of the youth participants in this study were 8 years of age or older.

Most primary caregivers were the child's mother (85%), and 69% were unmarried. Caregivers ranged in age from 18 to 81 years, with a mean age of 33 (standard deviation [*SD*] = 9.6). Forty-three percent of caregivers reported Hispanic ethnicity, with 38% reporting White race and 25% identifying as African American. Seventy-five percent of the families in the sample were below the federal poverty line. One third of caregivers had not completed high school and 43% were employed.

Almost one-half (48%) of study children had experienced one or more forms of direct maltreatment while 80% had witnessed violence. Physical assault was the most common form of maltreatment reported by caregivers (41%), followed by emotional abuse (28%), parental kidnapping (18%), and neglect (17%). About one half (52%) of caregivers in the study reported parenting stress in the "clinical" range and about one quarter (26%) reported "clinical" PTSD symptoms in their children.

Data Collection

Study assessments were administered to participants in one-on-one interviews with a trained site staff person in either English or Spanish. The assessment battery was designed so that it could be completed in less than an hour. However, assessments contained a variable number of items depending on the age of the child who was the subject of the assessment. All sites provided incentives of cash or gift cards for completing assessments ranging from \$20 to \$50.

Measures

Predictors selected for the current study were chosen from among the measures collected for the overall SSPA evaluation of the effectiveness of the interventions. Among these available measures, this study utilizes those that have been shown by previous research to be associated with retention in research studies or in intervention programs among vulnerable families. Predictors fell into five categories: demographics and socioeconomic status (SES), violence exposure, mental health and behavioral functioning, family functioning, and intervention engagement. All the measures were drawn from the caregiver baseline assessment, with the exceptions of study retention and engagement in the interventions. Measures are fully described in Jaycox et al. (2011).

Outcome: study retention. Families who enrolled in the study and completed a baseline assessment but did not provide data for the 6-month follow-up assessment were defined as not retained. Families who provided data at both time points were defined as retained.

Predictor variables. Predictor variables included engagement in the intervention, demographics and SES indicators, child maltreatment and violence exposure, caregiver victimization, child functioning (behavior and PTSD), and family functioning (parenting stress, personal/family problems) variables.

Intervention engagement. We measured intervention engagement in two ways. First, intervention group assignment indicated if a family was placed in the study's intervention or control/comparison group. Second, family-level information on the type and quantity of services received was provided by the programs 6 months after a family enrolled in SSPA and covered the services received during this period for the families assigned to the intervention condition. Services varied by program and may have included therapy, case

management, advocacy, service coordination meetings, developmental assessments, and medical visits. To account for actual intervention engagement as opposed to program-intended service delivery, we created a dichotomous variable to indicate whether a family participated in any Safe Start services during the period. Approximately 19% of families assigned to the intervention condition did not receive any SSPA services between the baseline and 6-month follow-up assessment.

Demographics and SES indicators. Basic demographics were gathered from all caregivers, including own age and child's age, education, employment status, income, primary language, race and ethnicity, public assistance received, and marital status. These were collected with items adapted from the LONGSCAN study (LONGSCAN Measures Manual, 2011). Caregivers were also asked to rate their physical health relative to others their age on a 4-point scale from poor to excellent.

Caregivers were asked to report household income within specific categories (less than \$5,000, between \$5,000 and \$10,000, etc.). Using the income categories, number of persons in each household, and U.S. Department of Health and Human Services poverty guidelines for 2009, we classified each family as above or below the federal poverty line. When the poverty level for a family of a given size fell in the middle of an income category, we counted the entire category as in poverty.

Caregivers were assessed on the Everyday Stressors Index (ESI; Hall, 1983). From the ESI, a resource problem subscale was derived (Jaycox et al., 2011) that tapped perceptions of problems related to poverty such as not having enough money for basic necessities (range: 7–28).

Child maltreatment and total violence exposure. We derived an indicator of child maltreatment and total violence exposure using items from the Juvenile Victimization Questionnaire (Hamby, Finkelhor, Ormrod, & Turner, 2004a, 2004b). The child maltreatment measure was the sum of affirmative responses to questions regarding whether a child had ever experienced (a) physical abuse (adults hitting or hurting the child excluding spanking), (b) emotional abuse (intimidation, insults, or statements about not wanting the child), (c) neglect (lack of food, medical care, or shelter) and (d) kidnapping by a parent (range: 0–4). The total violence exposure score represents the number of events of violence exposure in the child's lifetime (range: 0–17).

Caregiver traumatic experiences. Caregivers completed a traumatic experiences scale modified from the Traumatic Stress Survey (TSS; Gallagher, Riggs, Byrne, & Weathers, 1998). The scale asked whether the caregiver or those close to her/him experienced the death of a loved one, accident, injury, or displacement in the past year (range: 0–4).

Behavior problems. Two measures were used to develop a score for total behavior problems. Children between the ages of one and three were assessed with the Brief Infant-Toddler Social and Emotional Assessment (BITSEA; Briggs-Gowan & Carter, 2002). Internalizing and externalizing behaviors for 3- to 18-year-olds were measured with the Behavior Problems Index (BPI; Peterson & Zill, 1986), along with four additional items from National Longitudinal Survey of Youth. The two scales were combined for use over the entire age range (1–18 years) using an IRT procedure (see Jaycox et al., 2011). The resulting score for behavior problems is a standard score, with a mean of 0 and a standard deviation of 1.

PTSD. To assess caregiver's perceptions of PTSD symptoms in children aged 3–10, caregivers were asked the 27-item PTSD subscale from the Trauma Symptom Checklist for Young Children (TSCYC; Briere et al., 2001). We created a dichotomous measure from this scale that identifies those children whose PTSD symptoms were in the “significant” range according to the scoring provided by the scale developers (Briere et al., 2001).

Parenting stress. To examine parenting stress, caregivers of children up to 12 years of age were asked the 36-item Parenting Stress Index-Short Form (PSI-SF; Reitman, Currier, & Stickler, 2002). We created a dichotomous measure that identifies caregivers who reported stress levels in the “clinical” range according to the scoring provided by the scale developers (Reitman et al., 2002).

Personal/family problems. All caregivers completed this scale, drawn from the ESI (Hall, 1983), as described in Jaycox et al., 2011. The scale tapped concerns about health, concerns about children, disagreements with others, and having too many responsibilities (range: 13–52).

Analysis Plan

The analyses for this study were conducted in two steps: first testing single predictors of retention, and then testing the relative importance of predictors in multivariate models. In the first step, we tested (one at a time) for significant relationships between each predictor and retention in the study using a logistic regression model, including a site fixed effect and the predictor variable. Results of these analyses revealed single order relationships among our predictors and study retention and indicated which predictors to carry forward into the multivariate models in step two. We used the liberal selection criterion of critical value $p < .20$ to signal which variables to include in further analyses, as is customary when selecting the most salient variables from among a larger data pool.

In the second step, we conducted multivariate logistic regression models predicting retention with the most salient predictors identified during the first step. These models also included a site fixed effect. We estimated two models with differing indicators of participation in SSPA services. Model 1 includes the full sample where assignment to either the intervention or control/comparison group is used to measure engagement in SSPA services. Model 2 includes the subsample of families assigned to the intervention group where actual uptake of any SSPA services is used to measure intervention engagement.

RESULTS

Step 1: Predictors of Study Retention Examined Separately

Table 2 displays descriptive statistics and results from logistic regressions predicting study retention, controlling for site fixed effects. These analyses revealed that most of the study predictors were not related to retention, with four exceptions. Caregivers who were older, who reported more maltreatment of the child, and who were assigned to the intervention group were more likely to be retained in the study. Among those who were assigned to the intervention group, those who received any services as part of SSPA were more likely to be retained in the study at 6 months.

Table 2. Descriptive Statistics for Study Predictors Among the Retained and Not Retained Groups (Controlling for Site)

<i>Demographics and health status</i>	<i>Retained</i>		<i>Not retained</i>		<i>Odds ratio (95% CI)</i>
	<i>N</i>	<i>M (SD) or %</i>	<i>N</i>	<i>M (SD) or %</i>	
Child age	649	5.56 (3.03)	436	4.99 (2.81)	1.01 (0.96, 1.07)
Caregiver age	643	33.62 (9.86)	431	31.98 (9.13)	1.02 (1.00, 1.03)*
Child gender					
Female	649	53.3%	435	50.6%	1.23 (0.94, 1.60) [‡]
Caregiver relationship to child					
Mother	646	84.2%	431	86.8%	0.83 (0.53, 1.31)
Caregiver ethnicity					
Hispanic/Latino	649	45.6%	436	39.9%	1.02 (0.75, 1.40)
Caregiver race					
White	649	39.3%	436	36.2%	1.22 (0.90, 1.66)
African American	649	21.6%	436	30.0%	0.87 (0.63, 1.19)
Caregiver living situation					
Lives with a spouse or partner	642	30.2%	434	25.8%	1.27 (0.94, 1.73) [‡]
Caregiver education					
Completed high school	648	66.7%	435	66.4%	1.15 (0.86, 1.53)
Caregiver employment					
Full- or part-time	649	42.8%	436	42.2%	0.93 (0.71, 1.23)
Caregiver physical health					
Good or excellent	647	63.8%	435	67.8%	0.77 (0.58, 1.02) [‡]
Poverty					
Below the federal poverty line	568	73.4%	357	76.5%	0.83 (0.59, 1.18)
Resource problems	649	15.00 (5.72)	436	16.05 (5.80)	0.98 (0.96, 1.01) [‡]
Number of children in the household younger than 18 years of age	648	2.49 (1.33)	435	2.61 (1.49)	0.97 (0.88, 1.06)
Violence exposure					
Caregiver traumatic experiences	647	0.29 (0.58)	435	0.31 (0.57)	1.11 (0.89, 1.39)
Child maltreatment	618	0.87 (1.08)	414	0.75 (0.99)	1.15 (1.01, 1.32)*
Total child victimization experiences	621	3.47 (2.68)	420	3.46 (2.81)	1.01 (0.96, 1.06)
Mental health indicators					
Child behavior problems	647	0.20 (0.98)	434	0.24 (0.95)	0.90 (0.78, 1.04) [‡]
"Clinical" level of parenting stress	631	54.8%	421	48.9%	1.17 (0.89, 1.54)
"Significant" child PTSD symptoms	649	26.0%	436	25.9%	0.87 (0.64, 1.18)
Family functioning					
Personal problems	649	25.07 (7.12)	436	25.58 (7.20)	0.99 (0.98, 1.01)
Intervention engagement					
Intervention group	649	59.0%	436	49.5%	1.47 (1.13, 1.92)*
Family received any services	383	94.8%	216	58.3%	15.77 (8.56, 29.04)**

Note. M = mean; SD = standard deviation; CI = confidence interval; PTSD = posttraumatic stress disorder. Probability of the difference statistic between retained and not retained is: [‡] $p < .20$; [†] $p < .10$; * $p < .05$; ** $p < .00$.

Step 2: Multivariate Predictors of Study Retention

Table 3 shows the results of multivariate models, which included selected predictors that showed some relationship with retention at the $p < .20$ level in analyses of single predictors with site fixed effects. Most predictors of study retention were not significantly related to retention in either model. Caregivers of intervention and control/comparison children (Model 1) were more likely to be retained if they rated their own physical health rated as

Table 3. Multivariate Regression Models Predicting Study Retention (Controlling for Site)

	<i>Model 1 N = 1005</i>		<i>Model 2 N = 554</i>	
	<i>OR</i>	<i>95% CI</i>	<i>OR</i>	<i>95% CI</i>
Demographics and health status				
Caregiver age	1.02	(1.00, 1.03)	1.01	(0.98, 1.04)
Child is female	1.14	(0.86, 1.51)	1.00	(0.64, 1.54)
Caregiver lives with a spouse or partner	1.15	(0.83, 1.60)	1.43	(0.84, 2.44)
Caregiver physical health is good or excellent	0.69	(0.51, 0.94)*	0.66	(0.41, 1.05)
Resource problems	0.98	(0.95, 1.00)	0.99	(0.95, 1.03)
Violence exposure				
Child maltreatment	1.17	(1.01, 1.35)*	1.25	(0.99, 1.59)
Mental health				
Child behavior problems	0.90	(0.77, 1.07)	0.87	(0.67, 1.13)
Engagement				
Intervention group	1.55	(1.17, 2.05)*	—	—
Any services received	—	—	16.17	(8.53, 30.66)**

Note. OR = odds ratio; CI = confidence interval.

Probability of the difference statistic between retained and not retained is: * $p < .05$; ** $p < .001$.

poor or fair, if they reported more maltreatment of the child, and if they were assigned to the intervention group. None of the measures of family demographics or child or family functioning were significantly related to retention. In the multivariate analysis limited to the intervention group (Model 2), only receipt of services was significantly related to retention.

DISCUSSION

Our study examined study retention in evaluations of programs for children exposed to violence. Drawing on a large and diverse sample of children allowed for analyses of a broader range of possible predictors of study retention than in prior studies. Although we examined a large number of possible predictors, the most striking findings were the relationships between engagement in the intervention and retention in the study. In the multivariate analysis of the entire sample, being assigned to the intervention group was a significant predictor of retention, and receipt of any services was the only significant predictor for those assigned to the intervention group.

After adjusting for site differences, caregivers in the intervention group were more than 16 times as likely to complete the follow-up research assessment if they had received some services. Those who did not uptake any SSPA services were very unlikely to complete a follow-up assessment, jeopardizing the intent-to-treat approach of the evaluation. If families who decline services cannot be retained in the study, intent-to-treat designs revert to “as-treated” analyses, which address a narrower question of what effects the program can expect when it is at least partly delivered.

Underlying this finding may be a tendency for families who decline services to terminate contact with a service agency. These results suggest that researchers and practitioners should take special care to attend to families who decline services if they are to be retained in research. Up-front engagement efforts during study and intervention enrollment such as those described by McKay (McKay et al., 1996; McKay & Bannon, 2004) could be helpful

in this regard. Recent research suggests that motivational interviewing may aid study and intervention retention for reluctant families (Chaffin et al., 2010; Damashek, Doughty, Ware, & Silovsky, 2011). Careful attention to motivational factors related to participation in the research, not just the intervention, need to be addressed.

Beyond treatment engagement, we found few demographic and SES participant characteristics related to retention. The only demographic variable related to retention in this study was caregiver age, confirming the findings of previous research indicating that older caregivers are more likely to be retained in family therapy interventions. Though some previous studies have found that members of racial and ethnic minorities and those with lower income or less education are less likely to complete family intervention programs, we found no evidence of such patterns in this study. Perhaps the high levels of inclusion of ethnic minorities in the SSPA sites was related to a higher level of cultural competence among site staff that boosted retention of ethnic minority participants.

Results also showed that caregiver health status was related to retention in the study—in this case it was poorer health that was related to retention among caregivers in the intervention and control/comparison groups. Perhaps the need for intervention was stronger for caregivers who were in poor health, and therefore they stayed longer with the study, and the services provided therein.

Caregiver report of maltreatment of the child was also related to retention, with caregivers reporting maltreatment more likely to be retained at follow-up. Previous research has found that abuse within families was related to disengagement from interventions (Lau & Weisz, 2003). This study may be a special case because the therapies offered focused on alleviating trauma symptoms resulting from violence, including child maltreatment. While perpetration data were not collected systematically, the process evaluation of the SSPA intervention identified anecdotally that the caregiver involved in the project was generally the nonoffending parent (Schultz et al., 2010). Caregivers who were aware their child had been maltreated and were willing to address this in therapy may have been more motivated to secure treatment for the child and thus stayed in the study at similar rates to those whose child did not have a history of direct maltreatment.

Child PTSD symptoms and parenting stress, likely the most appropriate measures of need for treatment in this study, were not related to study retention. Previous studies have found that need for treatment is sometimes related to increased engagement in research-related family-based services and sometimes neutral or related to decreased engagement. These inconsistent findings are likely due to two competing factors. First, the most troubled families may be offered more services or increased attention and therefore have increased contact with the service agency. On the other hand, the most troubled families may be less equipped to engage in long-term interventions and requirements of the research project, and therefore more likely to drop out. It is possible that these competing forces acted simultaneously, canceling each other out in the present study. It is also possible that PTSD measurement lacked precision, particularly for the younger children. Caregivers of young children may not be aware of the internal states of their children and may be unable to report accurately on their PTSD symptoms, which are often silent (Scheeringa, Wright, Hunt, & Zeanah, 2006). Nonetheless, our findings are in disagreement with previous studies that found individuals reporting more parental stress and complex problems other than mental health needs were unlikely to remain in intervention programs (Attride-Stirling et al., 2004; Ingoldsby, 2010) and in agreement with those who found no effect of symptom severity on (Burns et al., 1995; Pina et al., 2003).

Previous research has concluded that families in crisis situations are difficult to engage in long-term interventions because their present instability and immediate instrumental needs require a great deal of energy to manage (Prinz & Miller, 1994). In this context, attending therapy with a young child on a regular basis becomes an additional burden, which may be a lower priority than more immediate obligations (e.g. complying with requirements of court orders, finding stable housing, receiving medical treatment). Moreover, stressed families may find child-focused therapy inadequate for addressing their complex needs (Attride-Stirling et al., 2004). Attrition from intervention-related research studies may relate to a mismatch between the family's present priorities and the focus of the intervention. Future research could inform the design of interventions to serve highly stressed families.

A few limitations in our approach should be noted. The larger SSPA project that provided data for current study did not begin with the goal of studying predictors of study retention. Thus, this study is exploratory and makes use of all data available, asking which of the variables we measured were related to retention in the research project. We are not able to test a comprehensive theoretical model or address fine-grained personal characteristics related to study retention such as motivation to change. Nor were data available directly from families describing why they did not engage in services or continue to participate in the research assessments. The current analysis also does not address questions about program characteristics that promote participation. In particular, characteristics of program staff, such as cultural competence and interpersonal skills, have strong influence on participant engagement in treatment and research. To look across programs we utilized a sample pooled across sites and controlled for site effects. Variation due to site is indeed an important source of information and one this study cannot take full advantage of given the small samples at the individual sites. Despite these limitations, our study provides new opportunities to build the knowledge base on retention of children and their families in therapeutic interventions.

Delivering proven interventions to address the negative consequences of childhood violence exposure is a laudable goal, yet retention difficulties within the target population make it difficult to build an evidence base on effective community-based programming. The need for rigorous research on the effectiveness of community-based interventions for children exposed to violence remains strong. This research will not progress if research participants cannot be retained in studies long enough to gather outcome data from them.

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