

BRIEF REPORT

Two-Year Follow-Up of a Randomized Effectiveness Trial Evaluating MST for Juveniles Who Sexually Offend

Elizabeth J. Letourneau
Johns Hopkins University

Scott W. Henggeler and Michael R. McCart
Medical University of South Carolina

Charles M. Borduin
University of Missouri

Paul A. Schewe
University of Illinois-Chicago

Kevin S. Armstrong
Medical University of South Carolina

Building on prior efficacy trials (i.e., university-based, graduate students as therapists), the primary purpose of this study was to determine whether favorable 12-month outcomes, obtained in a randomized effectiveness trial (i.e., implemented by practitioners in a community mental health center) of multisystemic therapy (MST) with juveniles who had sexually offended (JSO), were sustained through a second year of follow-up. JSO ($n = 124$ male youth) and their families were randomly assigned to MST, which was family based and delivered by community-based practitioners, or to treatment as usual (TAU), which was primarily group-based cognitive-behavioral interventions delivered by professionals within the juvenile justice system. Youth averaged 14.7 years of age ($SD = 1.7$) at referral, were primarily African American (54%), and 30% were Hispanic. All youth had been diverted or adjudicated for a sexual offense. Analyses examined whether MST effects reported previously at 1-year follow-up for problem sexual behaviors, delinquency, substance use, and out-of-home placement were sustained through a second year of follow-up. In addition, arrest records were examined from baseline through 2-year follow-up. During the second year of follow-up, MST treatment effects were sustained for 3 of 4 measures of youth problem sexual behavior, self-reported delinquency, and out-of-home placements. The base rate for sexual offense rearrests was too low to conduct statistical analyses, and a between-groups difference did not emerge for other criminal arrests. For the most part, the 2-year follow-up findings from this effectiveness study are consistent with favorable MST long-term results with JSO in efficacy research. In contrast with many MST trials, however, decreases in rearrests were not observed.

Keywords: juvenile sex offender, randomized controlled trial, treatment, follow-up

This 2-year follow-up study examined the sustainability of 1-year treatment effects that were observed in an effectiveness trial of multisystemic therapy (MST; Henggeler, Schoenwald, Borduin, Rowland, & Cunningham, 2009) with juveniles who sexually offended (JSO). The effectiveness trial (Letourneau et al., 2009)

demonstrated favorable MST treatment effects at 1-year postpreferal for sexual behavior problems, delinquency, and costly out-of-home placements. These findings were consistent with two prior efficacy studies of MST, which reported strong long-term reductions in JSO recidivism and incarceration rates (Borduin, Heng-

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Elizabeth J. Letourneau, Department of Mental Health, Bloomberg School of Public Health, Johns Hopkins University; Scott W. Henggeler and Michael R. McCart, Family Services Research Center, Department of Psychiatry and Behavioral Sciences, Medical University of South Carolina; Charles M. Borduin, Department of Psychological Sciences, University of Missouri; Paul A. Schewe, Department of Criminology, Law and Justice, University of Illinois-Chicago; and Kevin S. Armstrong, Family Services Research Center, Department of Psychiatry and Behavioral Sciences, Medical University of South Carolina.

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Correspondence concerning this article should be addressed to Elizabeth J. Letourneau, Department of Mental Health, Bloomberg School of Public Health, Johns Hopkins University, 624 North Broadway, Hampton House/Room 831, Baltimore, MD 21205. E-mail: eletourn@jhsph.edu

geler, Blaske, & Stein, 1990; Borduin, Schaeffer, & Heblum, 2009).

Such findings have important implications for practice and policy. The results suggest that JSO, who account for a substantial proportion of sexual harm, particularly against younger children (Finkelhor, Ormrod, & Chaffin, 2009), can be treated effectively in the community with family-based services. Moreover, the findings indicate the potential of significant cost savings, because about 26% of treatment services for JSO are provided in costly residential or secure settings (McGrath, Cumming, Burchard, Zeoli, & Ellerby, 2010).

In further consideration of these practice and policy implications, the primary purpose of this study was to evaluate whether MST treatment effects reported by Letourneau et al. (2009) at 1-year postreferral were sustained during a second year of follow-up. In addition, this study also examined rearrest rates from time of referral through the 2-year follow-up. We hypothesized that, relative to youth who received treatment as usual (TAU) for JSO (i.e., primarily cognitive-behavioral group treatment), youth in the MST condition would sustain their treatment gains through the second year of follow-up and evidence significantly fewer rearrests.

Method

Design and Procedures

Study design and procedures are described more fully in earlier publications (Henggeler, Letourneau, et al., 2009; Letourneau et al., 2009). Briefly, a 2×5 (Treatment Type [MST vs. TAU] \times Time [baseline, 6, 12, 18, and 24 months postbaseline]) factorial design with random assignment of youth to treatment conditions was used. Blocked randomization was used to guard against unequal distribution of participants with child versus peer victims. The present report focuses on the second year of follow-up (i.e., 18 and 24 months postbaseline). Arrest outcomes were calculated from baseline through the 2-year follow-up. Research assessments, collected at the five time points, included demographic information, youth and caregiver reports on youth sexual risk behaviors, and youth reports on delinquency and substance use. During brief monthly telephone assessments, all caregivers reported on youth placements, and caregivers of youth in active MST treatment also completed an MST therapist adherence questionnaire. Caregivers were compensated with \$30 for up to five assessments, and \$10 for up to 10 brief telephone interviews. Three university institutional review boards approved study procedures, and a federal confidentiality certificate provided additional protection for participants. Data collection was not blind to condition, except for the baseline assessment, which preceded randomization.

Participants

Figure 1 depicts the flow of participants from referral through the end of follow-up. All participants were referred from the district state's attorney after having been charged with a sexual offense (i.e., the index offense). To be eligible for this study, youth must have been (a) ordered to outpatient sex offender treatment following either diversion (i.e., where the prosecutor has discretion to drop charges if youth complies with specific requirements) or

adjudication (i.e., where the youth has been formally adjudicated delinquent of an offense) for the index offense, (b) residing with a caregiver and not in temporary care, (c) 11–17 years of age, and (d) absent of current psychotic symptoms or serious developmental delay. Participants had to be fluent in English or Spanish. To improve generalizability of results, youth were not excluded on the basis of other mental health or behavioral problems. Of 178 eligible youth, 131 were recruited (i.e., 74% recruitment rate, see Figure 1) and 124 contributed data to the current study. Of the seven youth not contributing data to the present study, two withdrew without providing any study data, two were removed after preexisting disqualifying conditions were identified, and three were girls whose data were removed to improve generalizability of findings to the broader literature, which tends to focus on sex offenses committed by boys. Assessment completion rates at baseline and 18 and 24 months postbaseline were 100%, 93%, and 92%, respectively.

Youth were 14.7 years of age ($SD = 1.7$) at recruitment. Most youth were African American (54%) or White (44%); and 30% indicated Hispanic ethnicity. The most common index offense charges included aggravated criminal sexual assault (32%), criminal sexual assault (15%), aggravated criminal sexual abuse (15%), and criminal sexual abuse (24%). More than one third (38%) of the sample had prior nonsexual offenses. See Letourneau et al. (2009) for additional offense and caregiver characteristics.

Intervention Conditions

Across conditions, adjudicated youth ($n = 69$ or 56%) were required to attend outpatient sex offender treatment and subjected to other probation conditions (e.g., meetings with probation officers, community service). Diverted youth ($n = 55$ or 44%) were required to attend outpatient sex offender treatment, but had few other requirements.

Multisystemic therapy. MST is a family- and a community-based treatment for adolescents presenting with serious behavioral and clinical problems and at imminent risk of out-of-home placement. MST is well-specified (Henggeler, Schoenwald, et al., 2009) and well-supported, with 10 published randomized trials with delinquent youth and their families (Henggeler, Sheidow, & Lee, 2007). MST clinicians develop and direct interventions toward ameliorating individual, family, peer, school, and community factors that are linked directly and/or indirectly with the youth's presenting problems, with caregivers viewed as the keys to achieving sustainable outcomes. Therapists draw on evidence-based intervention strategies, such as pragmatic family therapy approaches and cognitive-behavioral therapy interventions, to address relevant factors. The central emphasis of MST is usually to develop parenting competencies and to overcome any barriers (e.g., caregiver skill deficits, substance abuse, lack of social support) to achieving those competencies.

Standard MST intervention and quality assurance procedures (e.g., Henggeler, Schoenwald, et al., 2009) were followed in this study. Four therapists with caseloads of four to six families and an on-site MST supervisor comprised the MST team. Therapists delivered interventions primarily in families' homes and elsewhere as needed (e.g., schools); and families had 24-hr/7 days-a-week access to their therapist or another team member. Individualized assessments were conducted with youth, family members, and

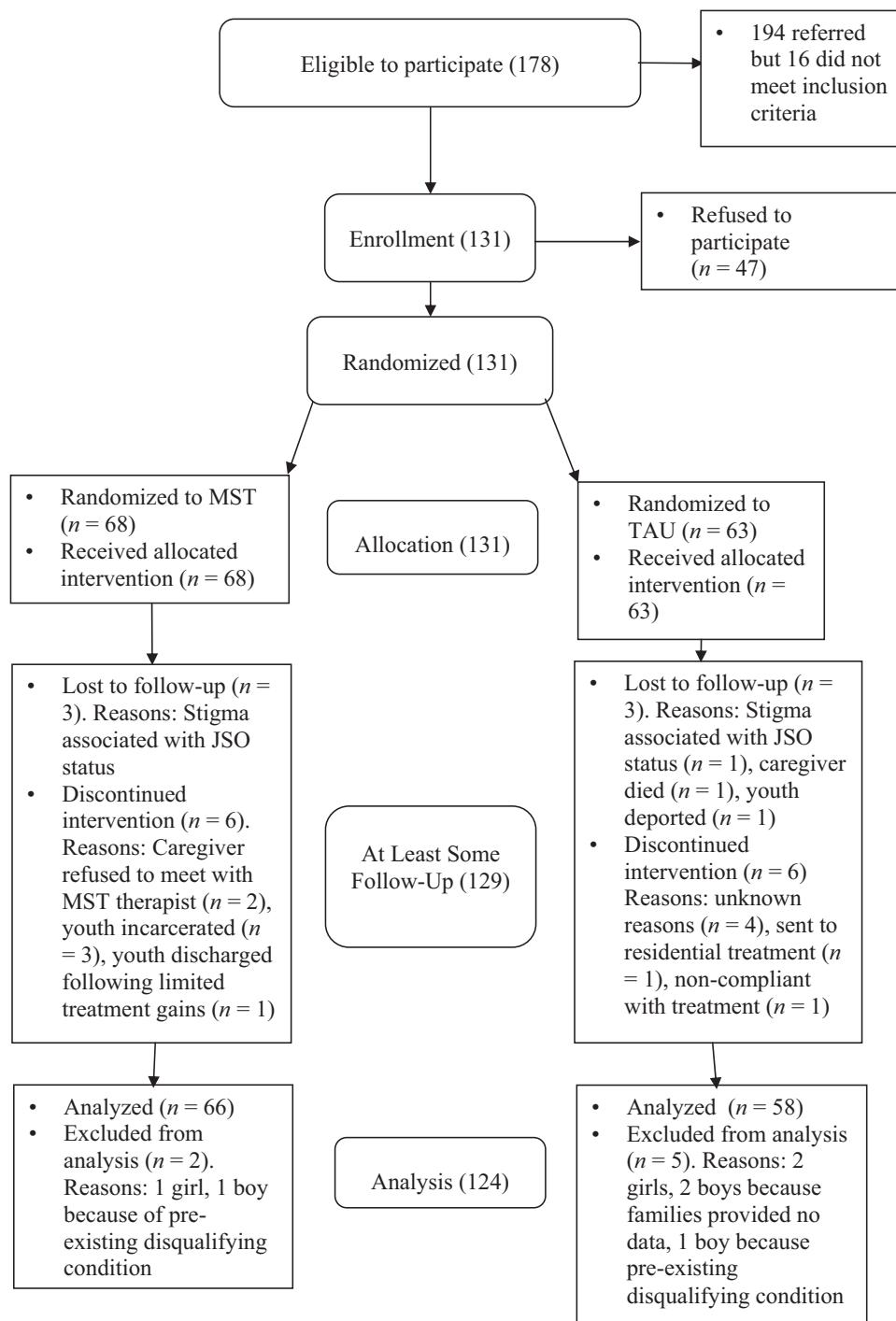


Figure 1. Sampling and flow of participants. MST = multisystemic therapy; TAU = treatment as usual; JSO = juveniles who had sexually offended.

other important members of youths' social ecologies (e.g., probation officers) to develop treatment goals and to identify the factors considered most relevant to initiation and/or maintenance of the problem sexual behavior. Individualized treatment plans were developed, and well-validated treatment strategies were employed to address the factors associated with sexually abusive and other

antisocial behaviors. Caregiver participation was a critical component of all treatment plans, and improved parenting was shown to mediate favorable outcomes with these youth (Henggeler, Letourneau, et al., 2009).

The standard MST intervention was enhanced to account for clinical issues more common or pertinent to JSO and their families.

As specified in a supplemental therapist training manual (Borduin, Letourneau, Henggeler, Saldana, & Swenson, 2005), additional protocols addressed youth and caregiver denial about the offense, safety planning to minimize risk of reoffending, and promotion of age-appropriate and normative peer social relationships. With respect to denial, therapists were trained to determine whether caregiver denial interfered with treatment goals and, if so, to identify and address reasons for the denial (e.g., fear of additional social consequences). With respect to safety, therapists were trained to conduct a functional analysis of the index offense, and to target the behavioral drivers and other factors leading up to the offense for change. For example, if easy access to younger children was a driver of the youth's offending behavior, the therapist would work with caregivers to eliminate such access or ensure adequate supervision. With respect to age-appropriate and normative social experiences with peers, therapists were trained to include strategies for identifying prosocial peers among a youth's acquaintances and to assist parents to facilitate prosocial interactions (e.g., by providing pizza for a home movie night). Therapists also worked with caregivers and youth to identify and access desirable after school and community activities.

As reported previously (Letourneau et al., 2009), fidelity to the MST model did not achieve levels reported for previous studies, and families remained in treatment for an average of 7 months ($SD = 3$), which is longer than typical for MST targeting general delinquency but not for MST targeting JSO (Borduin et al., 1990; Borduin et al., 2009).

Treatment as usual. The TAU condition was implemented primarily by the juvenile sexual offender unit of the juvenile probation department. Here, cognitive-behavioral therapy with relapse prevention was delivered to groups of eight to 10 youth during weekly 60-min treatment sessions. Treatment targeted deviant sexual interests, victim empathy, cognitive distortions, and relapse prevention. Youth with comorbid problems (e.g., substance abuse) were referred to external agencies for treatment, and treatment could be augmented with family or individual youth sessions. No instrument was available to assess therapist fidelity to the TAU intervention; however, caregiver-reported client satisfaction ratings were high, as previously reported, supporting the viability of this model. In addition, five families made arrangements for private treatment, and data from these youth were retained in the statistical analyses. Youth remained in TAU for an average of 12.48 months ($SD = 9.92$).

Therapist Characteristics

Therapist characteristics are described in detail elsewhere (Letourneau et al., 2009). Briefly, MST was provided by five clinicians (three with master's degrees, one who completed his doctorate during the project, and one with a bachelor's degree) employed by a private community-based provider agency and supervised by a doctoral-level clinician. All members of the MST team completed a standard five-day MST training curriculum and a 1.5-day supplemental training specific to working with youth with sexual behavior problems and their families. As per standard MST quality assurance procedures (Schoenwald, 2008), weekly supervision sessions were held on site, and separate weekly consultation sessions were held via conference calls with MST expert consultants (the first and fourth authors).

The TAU treatment groups were led by seven treatment probation officers (four with master's and three with bachelor's degrees). The master's-level treatment probation officers also held clinical licenses, and all treatment probation officers completed a certification course for treating JSO. The treatment probation officers received group supervision approximately twice a month from a master's-level supervisor, who was licensed and experienced. All treatment probation officers earned a minimum of 20 annual continuing education units.

Outcome Measures

As noted previously, this report focuses on the sustainability of favorable MST outcomes reported at the 1-year follow-up as well as rearrest from baseline through a 2-year follow-up. To attenuate the risk that justice-involved youth might minimize their reports of inappropriate or illegal behavior, key outcomes were evaluated from multiple sources. Thus, problem sexual behaviors were assessed by youth self-report, parent report, and juvenile justice and criminal records, while general delinquent behavior was assessed by youth self-report and archival records. Other important but less central outcomes (i.e., youth substance use and out-of-home placements) were evaluated using a single source, reflecting the need to balance study resource capacity and participant time against the ideal of fully multimodal, multirespondent assessment protocols. There is no reason to suspect that participant baseline responses varied by condition, because all youth were mandated to treatment and involved in the same juvenile justice system.

Problem sexual behavior. Youth problem sexual behaviors were assessed with the youth-report and caregiver-report versions of the Adolescent Clinical Sexual Behavior Inventory (ACSBI; Friedrich, Lysne, Sim, & Shamos, 2004), a 45-item instrument that measures inappropriate or concerning sexual behaviors. Items are measured on a 3-point scale from 0 (*not true*) to 2 (*very true*). The response time for the ACSBI was originally "past 12 months," and this was altered to "past 3 months" for consistency with other measures (see Delinquency and Substance Use subsections). The ACSBI has been validated with samples of sexually abused and nonabused youth (alpha range: .65-.81; Friedrich et al., 2004). Initial factor analysis suggested five subscales, including Sexual Knowledge/Interest (e.g., shows off their skin or body parts), Concerns About Appearance (e.g., is unhappy with their looks), Fear (e.g., has no friends of the opposite sex), Sexual Risk/Misuse (e.g., you are worried about your sexual behavior), and Divergent Sexual Interests (e.g., peeps into windows or tries to see others in the bathroom). Only the latter two subscales were considered most relevant to this study, given their relative focus on inappropriate sexual behaviors. The youth- and caregiver-report versions of the Divergent Sexual Interests subscale include nine and five items, respectively. The youth- and caregiver-report versions of the Sexual Risk/Misuse subscale include eight and 10 items, respectively. For the three assessment points examined in the present study (i.e., baseline, 18, and 24 months), small to moderate correlations were observed between the youth- and caregiver report versions of the Divergent Sexual Interest subscale (r range: .08-.38) and the Sexual Risk/Misuse subscale (r range: .21-.38). At baseline, 18, and 24 months, the alpha coefficients were .69, .78, and .58 (caregiver-report) and .35, .64, and .46 (youth-report) for the Divergent Sexual Interest subscale. The alphas were .81, .68, and

.83 (caregiver-report) and .36, .71, and .70 (youth-report) for the Sexual Risk/Misuse subscale.

Delinquency. Youth criminal behavior was measured by the Self-Report Delinquency Scale (SRD; Elliott, Huizinga, & Ageton, 1985) and arrest records. The SRD is a well-validated measure (Thornberry & Krohn, 2000) that assesses self-reported criminal and delinquent acts during the past 90 days. The 35-item General Delinquency subscale was used in the present study and the alpha coefficients at baseline, 18, and 24 months were .86, .57, and .72, respectively. In addition, new arrests were identified from juvenile and adult records from city, state, and federal criminal justice sources. Statutory offenses, traffic violations, probation violations, and sex offender registry violations were excluded from analyses.

Substance use. Frequency of youth substance use across the past 90 days was assessed with 16 items from the Personal Experience Inventory (PEI; Winters & Henley, 1989), a reliable and well-validated instrument (Stinchfield & Winters, 1997). Each item assessed a different substance (e.g., marijuana, cocaine, heroin, alcohol). In the present study, only one youth reported use of any substance other than marijuana or alcohol. Thus, only the marijuana and alcohol use items were considered, and they were tested as separate outcomes in the analysis.

Out-of-home placements. During each month of participation, caregivers indicated whether the youth's physical placement and/or guardianship had changed since the previous month. If so, the nature of the change was recorded. For the current study, youth were considered to have experienced an out-of-home placement if they were placed in any type of incarceration setting (e.g., prison; $n = 20$), treatment setting (e.g., residential treatment center; $n = 5$), or supervised living facility (e.g., foster care; $n = 8$) in Year 2.

Statistical Analyses

Because of the high proportion of "zero" responses, scores on all outcome measures were dichotomized. For the ACSBI, SRD, PEI,

and out-of-home placement outcomes, data from the 18- and 24-month assessments were combined to reflect *any* endorsement of the outcome during the 2-year follow-up. These data were then analyzed using hierarchical logistic regression. For the ACSBI, SRD, and PEI, the baseline score was entered in Step 1 and a dichotomous indicator for intervention condition (1 = MST, 0 = TAU) was entered in Step 2 to examine whether there was a treatment effect on the outcome during Year 2 after accounting for baseline status. Baseline data were not available for out-of-home placements. Thus, the model examining this outcome only included the indicator for intervention condition. In light of the unidirectional hypotheses (i.e., determining whether favorable outcomes at 1 year were sustained at 2 years), one-tailed tests of significance were used for these models. Regarding arrests, data were aggregated to reflect *any* arrest from study recruitment through the 2-year follow-up and analyzed using logistic regression. A baseline indicator was entered in Step 1 representing any lifetime arrest prior to recruitment (other than the index sexual offense). The treatment indicator was entered in Step 2 to examine whether there was a treatment effect, and a two-tailed test of significance was used for the arrest model, because these data had not been examined previously.

Results

Descriptive statistics for the outcomes prior to and following dichotomization are presented in Tables 1 and 2. Results from the regression models are presented in Table 3. Results from analyses (not shown) that included data from the three female participants were not substantively different from those reported below. Previously reported (Letourneau et al., 2009) independent-samples *t* tests and chi-square analyses identified no statistically significant between-groups differences on type of index offense, presence of prior offenses, or demographic variables at baseline, supporting the effectiveness of the randomization process.

Table 1
Descriptive Statistics for the Youth- and Caregiver-Report Outcomes

Outcome	Source		Baseline				Year 2			
			Raw		Binary		Raw		Binary	
			<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
ACSBI Divergent Sexual Interests	Caregiver	MST	2.06	2.71	0.78	0.41	1.66	2.63	0.45	0.50
		TAU	1.95	2.20	0.69	0.47	2.25	3.52	0.55	0.50
	Youth	MST	0.35	0.67	0.26	0.44	0.45	1.18	0.19	0.40
		TAU	0.28	0.67	0.21	0.41	0.58	1.03	0.34	0.48
ACSBI Sexual Risk/Misuse	Caregiver	MST	0.89	2.29	0.32	0.47	0.63	1.60	0.21	0.41
		TAU	0.74	1.82	0.21	0.41	0.64	2.47	0.17	0.38
	Youth	MST	1.23	1.46	0.57	0.50	1.32	2.09	0.39	0.49
		TAU	1.09	1.30	0.55	0.50	2.06	2.94	0.53	0.50
SRD General Delinquency	Youth	MST	5.92	11.25	0.74	0.44	6.29	18.47	0.45	0.50
		TAU	6.66	26.25	0.52	0.50	6.74	12.59	0.60	0.49
PEI marijuana	Youth	MST	1.64	7.51	0.23	0.42	2.95	12.05	0.29	0.46
		TAU	2.43	12.21	0.17	0.38	8.45	22.55	0.27	0.45
PEI alcohol	Youth	MST	0.73	2.94	0.21	0.41	2.27	11.41	0.30	0.46
		TAU	0.22	0.77	0.12	0.33	3.82	13.66	0.30	0.46
Placement ^a	Caregiver	MST	—	—	—	—	309.46	89.64	0.14	0.35
		TAU	—	—	—	—	323.18	80.82	0.28	0.45

Note. Sample size is 124. ACSBI = Adolescent Clinical Sexual Behavior Inventory; SRD = Self-Report Delinquency Scale; PEI = Personal Experiences Inventory; MST = multisystemic therapy; TAU = treatment as usual.

^a Data reflect days in out-of-home placement settings.

Table 2
Descriptive Statistics for the Arrest Outcome at Baseline and From Baseline Through Year 2

Outcome	Baseline ^a				Baseline to Year 2			
	Raw		Binary		Raw		Binary	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Arrests								
MST	0.85	1.66	0.35	0.48	2.36	3.56	0.52	0.50
TAU	0.66	1.38	0.28	0.45	2.59	4.41	0.50	0.50

Note. Sample size is 124. MST = multisystemic therapy; TAU = treatment as usual.

^a Data represent lifetime arrests prior to recruitment (other than the index sexual offense).

Problem Sexual Behaviors

During the second year of follow-up, youth and caregivers in the MST condition continued to report fewer problem sexual behaviors than did counterparts in the TAU condition on three of four measures. Specifically, after accounting for baseline status, youth and caregivers in the MST condition were significantly less likely than their counterparts in the TAU condition to report any divergent sexual interests, and youth in the MST condition were significantly less likely to report any sexual risk or misuse.

Delinquency

On the SRD, youth in the MST condition were significantly less likely than youth in the TAU condition to report any criminal behavior in Year 2, after accounting for baseline status. Regarding rearrests, from baseline to the 2-year follow-up, there were just four sexual offenses, which are too few to support separate analysis of this important outcome. On the other hand, approximately half of the sample experienced at least one arrest for a nonsexual

offense during the 2-year follow-up. There was no between-groups difference on this outcome.

Substance Use

The reduction in substance use that favored youth in the MST condition during the first year of follow-up was no longer sustained during the second year.

Out-of-Home Placements

The between-groups difference in youth who received an out-of-home placement during the first year of follow-up was sustained during the second year. Specifically, caregivers in the MST condition were significantly less likely than caregivers in the TAU condition to report placement of their youth in Year 2.

Discussion

With one exception, the results support the capacity of MST to sustain favorable clinical changes among JSO through a 2-year follow-up. Specifically, treatment effects regarding decreased problem sexual behavior, self-reported delinquency, and out-of-home placements were sustained. Of import, these results were obtained by practitioners working within a community-based provider agency. Thus, the favorable results for JSO obtained in MST efficacy trials were extended, in part, to clinical practice in real-world community treatment settings. Such findings support efforts to transport MST interventions for JSO.

In contrast with expectations, MST effects on rearrest were not observed. This result conflicts with the findings of many MST randomized trials with serious juvenile offenders (Henggeler, 2011). In other effectiveness studies that found attenuated effects on recidivism (i.e., Henggeler, Melton, Brondino, Scherer, & Hanley, 1997; Sundell et al., 2008), therapist fidelity to MST treatment principles (i.e., treatment adherence) has been both low and in-

Table 3
Final Logistic Regression Models

Outcome	Source	Contrasts	<i>B</i>	<i>SE</i>	<i>W</i>	<i>OR</i>	95% CI
ACSBI Divergent Sexual Interests	Caregiver	Baseline status	1.55	0.48	10.36**	4.71	[1.83, 12.09]
		Condition	-0.68	0.41	2.79*	0.51	[0.23, 1.13]
	Youth	Baseline status	0.86	0.47	3.28*	2.35	[0.93, 5.94]
		Condition	-0.86	0.44	3.83*	0.42	[0.18, 1.00]
ACSBI Sexual Risk/Misuse	Caregiver	Baseline status	0.86	0.49	3.08*	2.36	[0.91, 6.16]
		Condition	0.30	0.48	0.39	1.35	[0.53, 3.46]
	Youth	Baseline status	0.53	0.38	1.90	1.69	[0.80, 3.57]
		Condition	-0.65	0.38	2.96*	0.52	[0.25, 1.09]
SRD General Delinquency	Youth	Baseline status	0.84	0.42	4.07*	2.31	[1.02, 5.23]
		Condition	-0.90	0.40	4.94*	0.41	[0.19, 0.90]
PEI marijuana	Youth	Baseline status	1.39	0.47	8.56**	4.00	[1.58, 10.16]
		Condition	-0.00	0.43	0.00	1.00	[0.43, 2.31]
PEI alcohol	Youth	Baseline status	1.05	0.51	4.29*	2.85	[1.06, 7.70]
		Condition	-0.11	0.41	0.07	0.90	[0.40, 2.01]
Placement	Caregiver	Condition	-0.85	0.47	3.34*	0.43	[0.17, 1.06]
		Records	1.47	0.43	11.76**	4.37	[1.88, 10.14]
New arrests	Records	Baseline status	1.47	0.43	11.76**	4.37	[1.88, 10.14]
		Condition	-0.04	0.38	0.01	0.96	[0.45, 2.02]

Note. Sample size is 124. For the condition variables, TAU = 0 and MST = 1. *W* = Wald statistic; *OR* = odds ratio; *CI* = confidence interval; ACSBI = Adolescent Clinical Sexual Behavior Inventory; SRD = Self-Report Delinquency Scale; PEI = Personal Experiences Inventory.

* $p < .05$. ** $p < .001$.

versely correlated with rearrest. As reported in an evaluation of 1-year outcomes (Letourneau et al., 2009), average MST therapist fidelity scores for this trial were about 0.7 *SD* below those of typical MST practitioners working in community settings. In addition, fidelity scores were inversely correlated with arrests during Years 1 and 2 ($r = -.18$), although not significantly ($p = .15$). Although the MST intervention was adapted to better account for working with JSO and their families, a standard MST fidelity rating was used, which might not have adequately captured the full range of therapist behaviors, and which could account for the lower than expected ratings. Lower fidelity to standard MST, even in the presence of good fidelity to the adapted model, might also have accounted for failure to attain differences in arrests for nonsexual offenses. That is, therapists might have been more strongly focused on preventing future sexual offenses and focused less than usual on prevention of general delinquency. Future effectiveness research should incorporate measures of fidelity specific to adaptations.

Study Limitations and Strengths

Several study limitations are relevant. In comparison to other MST trials, youth in this study were less delinquent (i.e., 62% of the sample had no prior nonsexual offenses) and endorsement of problem behaviors and substance use was low. Relatedly, the measure of substance use was limited to just two items and obtained only using youth self-report. Likewise, out-of-home placements were obtained only using parent report, and those results would be strengthened if replicated based on official data. Moreover, the ACSBI youth-reported Divergent Sexual Interests subscale was characterized by low internal reliability, particularly at baseline when youth report might have been most guarded given the recency of juvenile justice consequences. However, similar treatment effects were observed on the youth- and caregiver-report versions of this subscale, providing some evidence of concurrent validity. Nevertheless, findings on this subscale should be interpreted with caution. Another limitation is that the ACSBI does not capture the full range of problematic or illegal youth sexual behaviors. External validity might be limited due to the exclusion of a small portion (5%) of eligible youth who were sent to restrictive placements, and selection of participants from a single urban area. In addition, with the low base rate of sexual recidivism observed here and by other researchers (see Fortune & Lambie, 2006), a longer follow-up is needed that extends through young adulthood when recidivism risk peaks (Loeber & Farrington, 2000). Study strengths include use of a randomized design, measurement of key outcomes from multiple perspectives, and reasonable recruitment rates and high participant retention rates. The investigators' methods for recruitment and retention, refined across dozens of randomized controlled trials, included (a) meeting participants at times (e.g., evenings, weekends) and places (e.g., homes, other community locations) convenient to their schedules; (b) following up with participants as many times as needed to schedule sessions (vs. imposing arbitrary contact limits) and with sensitivity to their life circumstances (e.g., not when preoccupied by other stressors); (c) training research assistants to avoid taking scheduling difficulties (e.g., missed appointments, unreturned or intentionally dropped calls) personally and to remain professional and

positive whenever interacting with participants; and (d) providing reasonable compensation to participants for their time.

Conclusion

Youth treated with MST remained at significantly lower risk of out-of-home placement through the second year of follow-up relative to their TAU counterparts. Further, in contrast to youth in the TAU condition, those who received MST continued to achieve significantly greater improvement regarding problem sexual behavior and self-reported delinquency. These results suggest that an intensive, family- and community-based intervention can protect youth who have sexually offended from disruptive and costly placements, and can achieve significantly greater clinical improvement relative to typical treatment services.

References

- Borduin, C. M., Henggeler, S. W., Blaske, D. M., & Stein, R. (1990). Multisystemic treatment of adolescent sexual offenders. *International Journal of Offender Therapy and Comparative Criminology*, *34*, 105–113. doi:10.1177/0306624X9003400204
- Borduin, C. M., Letourneau, E. J., Henggeler, S. W., Saldana, L., & Swenson, C. C. (2005). *Treatment manual for multisystemic therapy with juvenile sexual offenders and their families*. Unpublished manual. Department of Psychiatry and Behavioral Sciences, Medical University of South Carolina, Charleston, South Carolina.
- Borduin, C. M., Schaeffer, C. M., & Heiblum, N. (2009). A randomized clinical trial of multisystemic therapy with juvenile sexual offenders: Effects on youth social ecology and criminal activity. *Journal of Consulting and Clinical Psychology*, *77*, 26–37. doi:10.1037/a0013035
- Elliott, D. S., Huizinga, D., & Ageton, S. S. (1985). *Explaining delinquency and drug use*. Beverly Hills, CA: Sage.
- Finkelhor, D., Ormrod, R., & Chaffin, M. (2009, December). Juveniles who commit sex offenses against minors. *Juvenile Justice Bulletin*. Retrieved from <https://www.ncjrs.gov/pdffiles1/ojdp/227763.pdf>
- Fortune, C.-A., & Lambie, I. (2006). Sexually abusive youth: A review of recidivism studies and methodological issues for future research. *Clinical Psychology Review*, *26*, 1078–1095. doi:10.1016/j.cpr.2005.12.007
- Friedrich, W. N., Lysne, M., Sim, L., & Shamos, S. (2004). Assessing sexual behavior in high-risk adolescents with the Adolescent Clinical Sexual Behavior Inventory (ACSBI). *Child Maltreatment*, *9*, 239–250. doi:10.1177/1077559504266907
- Henggeler, S. W. (2011). Efficacy studies to large-scale transport: The development and validation of MST programs. *Annual Review of Clinical Psychology*, *7*, 351–381. doi:10.1146/annurev-clinpsy-032210-104615
- Henggeler, S. W., Letourneau, E. J., Chapman, J. E., Borduin, C. M., Schewe, P. A., & McCart, M. R. (2009). Mediators of change for multisystemic therapy with juvenile sexual offenders. *Journal of Consulting and Clinical Psychology*, *77*, 451–462. doi:10.1037/a0013971
- Henggeler, S. W., Melton, G. B., Brondino, M. J., Scherer, D. G., & Hanley, J. H. (1997). Multisystemic therapy with violent and chronic juvenile offenders and their families: The role of treatment fidelity in successful dissemination. *Journal of Consulting and Clinical Psychology*, *65*, 821–833. doi:10.1037/0022-006X.65.5.821
- Henggeler, S. W., Schoenwald, S. K., Borduin, C. M., Rowland, M. D., & Cunningham, P. B. (2009). *Multisystemic treatment of antisocial behavior in children and adolescents* (2nd ed.). New York, NY: Guilford Press.
- Henggeler, S. W., Sheidow, A. J., & Lee, T. (2007). Multisystemic treatment (MST) of serious clinical problems in youths and their families. In

- D. W. Springer & A. R. Roberts (Eds.), *Handbook of forensic mental health with victims and offenders: Assessment, treatment, and research* (pp. 315–345). New York, NY: Springer.
- Letourneau, E. J., Henggeler, S. W., Borduin, C. M., Schewe, P. A., McCart, M. R., Chapman, J. E., & Saldana, L. (2009). Multisystemic therapy for juvenile sexual offenders: 1-year results from a randomized effectiveness trial. *Journal of Family Psychology, 23*, 89–102. doi:10.1037/a0014352
- Loeber, R., & Farrington, D. P. (2000). Strategies and yields of longitudinal studies on antisocial behavior. In D. M. Stoff, J. Brieling, & J. D. Maser (Eds.), *Handbook of antisocial behavior* (pp. 125–139). New York, NY: Wiley.
- McGrath, R., Cumming, G., Burchard, B., Zeoli, S., & Ellerby, L. (2010). *Current practices and emerging trends in sexual abuser management: The Safer Society 2009 North American Survey*. Brandon, VT: Safer Society Press.
- Schoenwald, S. (2008). Toward evidence-based implementation of evidence-based treatments: MST as an example. *Journal of Child and Adolescent Substance Abuse, 17*, 69–91. doi:10.1080/15470650802071671
- Stinchfield, R., & Winters, K. C. (1997). Measuring change in adolescent drug misuse with the Personal Experience Inventory (PEI). *Substance Use & Misuse, 32*, 63–76. doi:10.3109/10826089709027297
- Sundell, K., Hansson, K., Lofholm, C. A., Olsson, T., Gustle, L. H., & Kadesjo, C. (2008). The transportability of MST to Sweden: Short-term results from a randomized trial of conduct disordered youth. *Journal of Family Psychology, 22*, 550–560. doi:10.1037/a0012790
- Thornberry, T. P., & Krohn, M. D. (2000). The self-report method for measuring delinquency and crime. *Criminal Justice, 4*, 33–83.
- Winters, K. C., & Henley, G. (1989). *The Personal Experiences Inventory*. Los Angeles, CA: Western Psychological Services.

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