

Social Programs That Work Review

Evidence Summary for Multisystemic Therapy (MST)

HIGHLIGHTS:

- **PROGRAM:** An intensive family- and community-based treatment program for youth with severe conduct problems, that seeks to address the multiple causes of antisocial behavior.
- **EVALUATION METHODS:** Seven well-conducted randomized controlled trials (RCTs), carried out in the United States, United Kingdom, Canada, and Sweden. Other RCTs of MST have been conducted, but do not meet this website's criteria due to key study limitations.
- **KEY FINDINGS:** Of the well-conducted RCTs, three found large, statistically significant reductions in youth criminal activity over follow-up periods ranging from 2 to 22 years. The other four RCTs found no statistically significant effects on youth crime or other key behavioral outcomes. There are several possible reasons for the discrepant findings, as discussed in this summary, but these are only hypotheses as we believe additional research is needed to determine the conditions and populations in which MST is effective.

I. Evidence rating: **SUGGESTIVE TIER**

The standard for Suggestive Tier is:

Programs that have been evaluated in one or more well-conducted RCTs (or studies that closely approximate random assignment) and found to produce sizable positive effects, but whose evidence is limited by only short-term follow-up, effects that fall short of statistical significance, or other factors. Such evidence suggests the program may be an especially strong candidate for further research, but does not yet provide confidence that the program would produce important effects if implemented in new settings.

II. Description of the Program:

Multisystemic Therapy (MST) is an intensive, manualized, licensed program for youth with severe conduct problems (e.g., violence, substance misuse, school expulsion) and their families. MST therapists work with the young person and family members using a variety of techniques, tailored to each family's specific needs, that are aimed at improving parenting skills, enhancing family relationships, increasing support from social networks, developing skills and resources, addressing communication problems, encouraging school attendance and achievement, and reducing the young person's association with delinquent peers.

MST is delivered by a team of specially trained therapists under the supervision of an MST supervisor. The therapists are available to the youth and his or her family 24 hours a day, seven days a week, and each therapist carries a small caseload of four to six families. The treatment typically lasts three to five months. Estimates of the program cost range from roughly \$4,000 to 7,000 per family in 2019 dollars.¹

[Click here for the website of MST Services](#), the organization dedicated to disseminating MST.

III. Evidence of Effectiveness:

This summary of the evidence on MST is based on a systematic search of the literature and correspondence with leading researchers to identify all well-conducted RCTs of MST. Our search identified seven such studies – three in the United States, two in the United Kingdom, one in Canada, and one in Sweden. Three of the studies found sizable, sustained reductions in participants’ criminal outcomes (studies 1, 2, and 3 below); the other four did not (studies 4, 5, 6, and 7 below). Possible reasons for the discrepant findings are discussed in our summaries of the latter four studies, but are only hypotheses as we believe further research is needed to determine the conditions and populations in which MST is effective.

The following text summarizes the seven RCTs and the effects found on all main outcomes measured in each study, including any such outcomes for which no or adverse effects were found. All effects shown are statistically significant at the 0.05 level unless stated otherwise.

Our search also identified a number of other RCTs that we believe, based on careful review, have key limitations that reduce confidence in their findings. We briefly discuss these studies at the end of this evidence summary.

STUDY 1: Missouri

This was an RCT with a sample of 176 serious offenders ages 12-17 in Missouri.² The youths were randomly assigned to a treatment group that received MST, or a control group that received individual therapy. Individual therapy was the usual community treatment for such youth offenders and, unlike MST, did not typically address systemic factors (i.e., family, school, peer group) that may have contributed to the youths’ delinquency. MST was delivered by trained doctoral students who were closely supervised the developers of MST. The average length of treatment in both groups was about six months.

At study’s inception, the youths averaged four felony arrests, and 48% had been arrested for a violent offense. The youths were predominantly male (69%), white (76%), and of low socio-economic status (70%).

¹ The \$4,000 estimate is based on Fonagy et. al. 2018 (see references). The \$7,000 estimate is based on an [analysis](#) by Blueprints for Healthy Youth Development.

² One of the early reports on this RCT (Henggeler 1991) stated that 200 youths were randomly assigned, whereas later reports (Schaeffer 2003, Borduin 1995, and Sawyer 2011) stated that the number of randomly-assigned youths was 176 youths. In our correspondence with Charles Borduin (a co-author on all of the follow-ups), he said that the correct randomized sample size is 176. He clarified that Henggeler 1991 incorrectly identified the 200 youths who completed a pre-program assessment as the randomized sample when, in fact, 24 youths dropped out of the study after that assessment and prior to random assignment.

Effects of MST 4 years after completion of the program (versus the control group), at average age 19:

- 64% reduction in likelihood of being arrested at least once over the four years (26% of the MST group were arrested vs. 71% of the control group).
- 88% reduction in the average number of arrests (an average of 0.45 arrests for the MST group vs. 3.88 for the control group).

Effects of MST 13.7 years after completion of the program (versus the control group), at average age 29:

- 38% reduction in likelihood of being arrested at least once over the 13.7 years (50% of the MST group were arrested vs. 81% of the control group).
- 54% reduction in the average number of arrests (an average of 1.8 arrests for the MST group vs. 4.0 for the control group).
- 57% reduction in the average number of days incarcerated as an adult (582 days for the MST group vs. 1357 days for the control group).

Effects of MST 21.9 years after completion of the program (versus the control group), at average age 37:

These effects were measured for all samples members who resided in Missouri at the previous follow-up (eight years earlier) and at some point since then. This represented 84% of the original randomized sample (82% of MST group members and 87% of control group members). The remainder were considered to be lost to follow-up. The reason for this approach is that all outcomes at this follow-up were measured with Missouri public records, capturing criminal justice system involvement within Missouri but not out of state.

- 36% reduction in likelihood of being convicted of a felony over the 21.9 years (35% of the MST group were convicted vs. 55% of the control group).
- No statistically significant effect on the average number of convictions for a felony (this number was 23% lower in the MST group vs. control group, but the difference was not statistically significant and is therefore only a preliminary finding and not reliable).
- No statistically significant effect on likelihood of being convicted of a misdemeanor.
- 33% reduction in the average number of convictions for a misdemeanor (2.39 convictions for the MST group vs. 3.58 for the control group).
- No statistically significant effect on the average number of years sentenced to incarceration (this number was 33% lower in the MST group vs. control group, but the difference was not statistically significant and is therefore only a preliminary finding and not reliable).

Discussion of study quality:

- This study had low sample attrition and a long-term follow-up: At the 4-year and 13.7-year follow-ups, outcome data were collected for 94-95% of the original sample. At the 21.9 year follow-up, outcome data were collected for 84% of the original sample, and follow-up rates were similar between the MST group and control group.
- The study appropriately sought to measure outcomes for all youth assigned to the MST group, regardless of whether or how long they participated in the program (i.e., the study used an “intention to treat” analysis).
- The study used official state data to measure the primary crime outcomes, and the research assistants collecting these data were blind as to whether youths were in the MST group or control group.
- The various reports on this study state that there were no statistically significant pre-program differences between the MST and control groups in criminal history or other characteristics (however, the reports do not provide a table of pre-program characteristics for the two groups to show whether there were any sizable non-significant differences).
- Study limitation: The authors describe this as an efficacy trial – that is, an RCT of MST as delivered under relatively ideal conditions (e.g., by therapists who were doctoral students under the close supervision of the MST developers). Its findings may not necessarily generalize to MST as delivered by community-based provider organizations under more typical implementation conditions.

Bottom line:

Based on our review, we believe this was a well-conducted RCT that found sizable, long-term effects on crime outcomes. One caution is that this study evaluated MST as delivered under relatively ideal conditions (e.g., as delivered by university doctoral students), and its findings may not necessarily generalize to MST as delivered by community-based provider organizations in more typical implementation settings.

STUDY 2: Missouri (Juvenile Sexual Offenders)

This was an RCT with a sample of 48 youth in Missouri, average age 14, who had been arrested for a serious sexual offense (e.g., rape or assault of younger children) and referred to the study by juvenile court personnel, and whose families had granted consent to study participation. The youths were randomly assigned to a treatment group that received MST, or a control group that received usual social services (namely, cognitive-behavioral individual and group therapy). MST was delivered by trained graduate students who were closely supervised by the developers of MST. The average length of treatment in both the MST group and control group was about seven months.

96% of youths in the sample were male, 73% were white, and 55% were of low socioeconomic status. At the study’s inception, they had an average of 4.3 previous arrests.

Effects of MST 8.9 years after completion of the program:

- 61% reduction in likelihood of being arrested at least once over the 8.9 years (29% of the MST group were arrested vs. 75% for the control group).
- 83% reduction in the average number of arrests for sexual crimes (an average of 0.13 for the MST group vs. 0.79 arrests for the control group).
- 70% reduction in the average number of arrests for non-sexual crimes (an average of 1.46 for the MST group vs. 4.88 for the control group).
- 80% reduction in the average number of days incarcerated (393 days for the MST group vs. 1943 for the control group).

Discussion of study quality:

- This study had a long-term follow-up and no sample attrition: At the 8.9 year follow-up, the outcome data – Missouri state records of arrests and incarcerations – were obtained for all 48 sample members. All 48 were living in Missouri at the time of follow-up, so state records likely captured most of their arrests and incarcerations (i.e., all except those that occurred in other states).
- At the start of the study, the MST group and control group were largely similar in demographics, prior criminal history, and other characteristics.
- The study appropriately sought to measure outcomes for all youth assigned to the MST group, regardless of whether or how long they participated in the program (i.e., the study used an intention to treat analysis).
- Research assistants collecting the outcome data were blind as to whether youths were in the MST group or control group.
- Study limitation: The authors describe this as an efficacy trial – that is, an RCT of MST as delivered under relatively ideal conditions (e.g., by therapists who were graduate students under the close supervision of the MST developers). Its findings may not necessarily generalize to MST as delivered by community-based provider organizations under more typical implementation conditions.

Bottom line:

Based on our review, we believe this was a small but well-conducted RCT that found large, long-term effects on crime outcomes. One caution is that this study evaluated MST as delivered under relatively ideal conditions (e.g., as delivered by university graduate students), and its findings may not necessarily generalize to MST as delivered by community-based provider organizations in more typical implementation settings.

STUDY 3: London, England

This was an RCT with a sample of 108 youths in North London, average age 14.9 years, who (i) had a court referral order for treatment or a supervision order for at least three months' duration, or were on parole following imprisonment; and (ii) were currently living at home with a primary caregiver. The youths were randomly assigned to either a group that received MST or a control group that received usual services (namely, extensive, customized services delivered by social workers, therapists, and probation officers, aimed at preventing reoffending). Program delivery was supervised by, MST Services.

In the year prior to random assignment, the youths in the sample had committed an average of 2.5 offenses, almost a third of which were violent. 82% of the youths were male, 34% were white, and almost all were of low socioeconomic status.

Effects of MST 24 months after random assignment (versus the control group):

- 78% reduction in the likelihood of committing an offense in the six months preceding the follow-up (8% of the MST group committed an offense vs. 36% of the control group).
- 80% reduction in the average number of offenses in the six months preceding the follow-up (an average of 0.10 offenses for the MST group vs. 0.51 for the control group).
- The MST group also had a consistently lower likelihood and average number of offenses during the full 24 months following random assignment, but the study report does not indicate whether these differences were statistically significant.

Discussion of study quality:

- The study had no sample attrition at the 24-month follow-up: Official police and court records were collected for 100% of sample members.
- At the start of the study, there were no statistically significant differences in demographic characteristics or criminal history between the MST group and control group, although there were a few sizable differences that did not reach statistical significance (49% of the MST group was white versus 26% of the control group, and 82% of the MST group had committed an offense in the prior six months vs. 67% of the control group). These differences were not controlled for in the study's analysis, but the higher rate of pre-program offenses for the MST versus control group would tend to cause a conservative study estimate of MST's impact and thus probably does not weaken confidence in the study's positive findings for MST. In addition, at the start of the study, the two groups were nearly identical in the average *number* of offenses (as opposed to rate of offending) in the prior six months, providing some reassurance about the two groups' similarity in criminal history.
- The study appropriately sought to measure outcomes for all youth assigned to the MST group, regardless of whether or how much they participated in the intervention (i.e., the study used an intention-to-treat analysis).

- The study evaluated MST as it is typically delivered in a community mental health setting, thus providing evidence of its effectiveness under real-world implementation conditions.
- The study was conducted by independent researchers, rather than the program developers.

Bottom line:

Based on our review, we believe this was a small but well-conducted RCT that found sizable effects on youth crime outcomes two years after random assignment. A strength of this study is that it evaluated MST as the program is typically delivered in a community setting, thus providing evidence of its effectiveness under real-world implementation conditions.

STUDY 4: Multiple Sites in England

Overview:

This is a well-conducted, multisite RCT that measured the effects of providing MST to youths with severe conduct problems and their families. The study randomly assigned 684 youths across nine sites in England to either a treatment group that received MST or a control group that received usual services. The study found no statistically significant effect on the primary outcome measured at the five-year follow-up – namely, the proportion of youths with a criminal conviction. Over the five year period, 60 percent of the MST group and 60 percent of the control group had a conviction. The study also found no significant effect on the primary outcome measured at the earlier, 18-month follow-up – namely, youth out-of-home placements.

Study design:

The study was conducted at nine sites in England, from which 684 youths and their families were recruited and randomly assigned to a treatment group that received MST (n=342) or to a control group that received usual services (n=342). Usual services consisted of the best available local services, which varied across sites but were not intended to be less intensive or less costly than MST. On average, youths in the sample were age 14 and had committed 1.2 criminal offenses in the year prior to study entry. The majority of the youths were white (78%), from low-income households (77%), and male (63%).

The study used official police records to measure criminal convictions through five years after random assignment. At earlier follow-ups, the study used official records to measure out-of-home placements through 18 months after random assignment. It also used surveys to measure other outcomes, including youths' antisocial behaviors and well-being and parents' parenting skills, at 6, 12, 18, 24, 36, and 48 months after random assignment.

Description of MST implementation:

Each of the nine sites in the study was licensed to deliver MST by MST Services. MST Services also closely monitored the quality of program delivery across the sites. At each site, MST was delivered by a team of specially trained therapists under the supervision of an MST supervisor, with weekly one-hour conference calls for consultation with an MST Services staff member. Adherence to the MST program model was independently monitored using a tool in which parents were asked about the intervention

services they actually received. Based on this tool, the sites were found to be generally successful in delivering MST in adherence to the program model. The average length of MST treatment in the study was four months.

Key findings:

The study found that MST had no statistically significant effect on the study's primary outcome measured at the five-year follow-up – the rate of criminal convictions. Specifically, 60% of youths in both the MST and control groups had at least one criminal conviction over the five years following random assignment. The study also found no overall pattern of positive or adverse effects among other outcomes, including out-of-home placements measured at the 18-month time point, and self- and parent-reported outcomes such as youths' anti-social behavior and well-being measured at various time points.

Discussion of study quality:

This was a large, well-conducted RCT. At the study's inception, members of the MST and control groups were highly similar in their demographic characteristics, behavior, mental health, and prior criminal activity. All study participants were appropriately analyzed within the group to which they were originally assigned, consistent with an intention-to-treat analysis. The key outcome of criminal convictions was measured using official police records, with low sample attrition (records were collected for 91% of MST group members and 88% of control group members). Official records on out-of-home placements were collected for nearly all study participants (99%). However, the self- and parent-reported outcomes measured via survey suffered from higher sample attrition that may reduce confidence in the survey-based findings (e.g., at the 48-month follow-up, survey completion rates were approximately 54% for MST group members and 49% for control group members).

Bottom line:

Based on our review, we believe this was a well-conducted RCT that found no significant effects on the primary outcomes of criminal conviction rates (measured over the five-year follow-up period) or rate of out-of-home placements (measured at the 18-month follow-up). A possible reason for this study's disappointing findings as compared to the more positive results of the earlier British RCT (Study 3) is that the youths in this study's sample were less delinquent at program entry than the youths in the earlier British RCT (in this study, the youths averaged 1.2 criminal offenses in the past year vs. 2.5 offenses for the youths in the prior RCT).

STUDY 5: Ontario, Canada

This was an RCT with a sample of 409 juvenile offenders in Ontario, Canada, whose average age was 14.6 years. The youths were randomly assigned to a group that received MST or a control group that received usual social services (consisting of probation in some sites and varied therapeutic services in other sites). MST Services trained the MST therapists and oversaw program delivery at the start of the project but shifted to a consulting role in the project's last year.

The sample members were predominantly male (74%) and from low or middle-income backgrounds. At the study's inception, 67% of the sample had been convicted of at least one offense, and 36% had been arrested for at least one violent offense.

Effects of MST 3 years after completion of the program (versus the control group):

- The study found no statistically significant effects on youths' conviction or incarceration rates, or on their average number of convictions.

Discussion of study quality:

- The study had a sizable sample (409 youths), and no sample attrition: Conviction and incarceration data were collected for 100% of the sample at the three-year follow-up using official conviction and incarceration data.
- At the start of the study, there were no statistically significant differences between the MST group and the control group in their observable characteristics.
- The study appropriately sought to measure outcomes for all youths assigned to the MST group, regardless of whether or how long they participated in the program (i.e., the study used an intention-to-treat analysis).
- The study was conducted by independent researchers, rather than the program developers.

Bottom line:

Based on our review, we believe this was a well-conducted RCT of MST, carried out in Ontario, Canada, that found no significant effects on youths' crime outcomes. The study authors offer several possible reasons for this study's disappointing findings as compared to the more positive findings from earlier U.S. RCTs: (i) the youths in the Ontario sample had less serious criminal histories, on average, than their counterparts in the U.S. studies; (ii) MST delivery in Ontario generally adhered to the MST model but such adherence was not as tight as in the U.S. studies, according to key implementation measures; (iii) the youths in the Ontario sample were of higher average socioeconomic status than those in the U.S. studies; and (iv) the control group in the Ontario study had access to more extensive social services than the control groups in the U.S. studies, including universal access to medical and hospital services.

STUDY 6: Sweden

This was an RCT with a sample of 156 delinquent youths in Sweden, whose average age was 15 years. The youths were randomly assigned to a group that received MST or a control group that received usual social services (in most cases, individual counseling or family therapy). Program delivery was supervised by MST Services. The average length of MST treatment was 4-5 months.

At the study's inception, 67% of the youths in the sample had been arrested at least once; 32% had been placed out of home at some point in the prior 6 months; 61% were from families on welfare; and all the youth had a diagnosed conduct disorder.

Effects of MST two years after random assignment (versus the control group):

- The study found no statistically significant effects on any of the targeted outcomes, including official arrest rates, self-reported delinquency, substance use, school attendance, and other outcomes.

Discussion of study quality:

- The study had low sample attrition: Outcome data were obtained for 86-94% of the sample (depending on the outcome), and follow-up rates were very similar for the MST and control groups.
- At the start of the study, youths in the MST group and control group were highly similar in key characteristics, such as delinquency, prior arrest rates, drug use, and psychiatric symptoms.
- The study appropriately sought to measure outcomes for all youths assigned to the MST group, regardless of whether or how long they participated in the program (i.e., the study used an intention-to-treat analysis).
- Outcomes were measured through both self- and caregiver-reports, as well as official police data on arrests.
- The study was conducted by independent researchers, rather than the program developers.

Bottom line:

Based on our review, we believe this was a well-conducted RCT of MST, carried out in Sweden, that found no significant effects on youth crime or other targeted outcomes. Possible explanations for the study's disappointing findings as compared to the more positive findings from earlier U.S. RCTs include: (i) MST delivery in Sweden did not adhere as closely to the MST program model as in the U.S. studies, based on implementation measures; (ii) the youths in the Swedish sample had less serious criminal histories, on average, than their counterparts in the U.S. studies; and (iii) the control group in Sweden had access to more extensive in-home services, such as counseling and family therapy, than the control groups in the U.S. studies.

STUDY 7: Southeastern U.S. City

This was an RCT with a sample of 164 youths with serious conduct problems, whose average age was 14.6 years. The youths were recruited from self-contained behavior intervention classrooms in public schools, designed for students whose conduct problems were serious enough to interfere with their being educated in a general school setting. The youths were randomly assigned to a group that received MST or to a control group that received usual services (primarily, behaviorally focused classroom management provided by the school). MST delivery was supervised by the MST program developers at the University of South Carolina, and generally adhered to the MST program model, based on implementation data.

The sample members were predominantly male (83%) and African American (60%), and most were from low-income families. At the study's inception, 68% of sample members had been involved in the juvenile court system.

Effects of MST 1.5-2.5 years after random assignment (versus the control group):

- The study found no statistically significant effect on the primary outcome of felony arrest rates over the 2.5 years after random assignment (45% of the MST group and 45% of the control group had a felony arrest). The study also found no significant effect on the percent arrested for any crime (felony, misdemeanor, or status offense such as truancy).
- At the final survey assessment, conducted 1.5 years after random assignment, the study found no statistically significant effects on the other three primary outcomes: parent-, self-, and teacher-reported externalizing behavior problems (e.g., aggressive, antisocial, and/or paranoid behavior).³
- At the 1.5-year mark, the study also found no significant effects on any secondary outcomes, including self-reported delinquency, self-reported drug use, grades, suspensions, and school absences.

Discussion of study quality:

- The study had low sample attrition: Outcome data were obtained for 96% of the MST group and 90% of the control group.
- At the start of the study, youths in the MST group and control group were highly similar in demographic characteristics, but the MST group scored slightly worse than the control group on behavioral measures.
- The study appropriately sought to measure outcomes for all youths assigned to the MST group, regardless of whether or how long they participated in the program (i.e., the study used an intention-to-treat analysis).
- Outcomes were measured through multiple sources, including self, parent, and teacher surveys, as well as official arrest records.
- The study was conducted by independent researchers rather than the program developers.

Bottom line:

Based on our review, we believe this was a well-conducted RCT of MST, carried out in a southeastern U.S. city by independent researchers. The study found no significant effects on the primary outcomes of felony arrests or youth externalizing behavior at the 1.5-2.5 year follow-up points. Possible explanations for the study's disappointing findings as compared to the more positive findings from earlier U.S. RCTs include: (i) youths in this study were recruited from schools rather than from the court system, and they and/or their families may therefore have been less motivated to energetically participate in therapy; and

³ The study found that, over the 1.5-year follow-up period, the *rates of change* in self- and parent-reported externalizing behavior differed significantly between the MST and control groups. However, at the 1.5-year mark (i.e., the longest-term assessment point), there were no statistically significant differences between the two groups, as some of the earlier differences had diminished.

(ii) the youths in this study appear to have had less serious criminal histories, on average, than their counterparts in the other U.S. studies.

OTHER STUDIES:

There have been a number of additional RCTs of MST in the United States and other countries, cited in the reference section below. The results of these studies tended to be more positive than those of the seven RCTs summarized in this report. However, these studies fall outside our website's criteria due to limitations that reduce confidence in the findings, such as high sample attrition or key departures from random assignment. For that reason, we do not provide detailed summaries of these studies.

IV. References:

Study 1- Missouri

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Study 2 – Missouri (Juvenile Sex Offenders)

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Study 3 – London, England

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Study 4 – Multiple Sites in England

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Study 5 – Ontario, Canada

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Study 6 – Sweden

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Study 7 – Southeastern U.S. City

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Other Studies

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