

**Last reviewed:** February 2018

**Intervention website:** [www.mstservices.com](http://www.mstservices.com)

# GUIDEBOOK INTERVENTION INFORMATION SHEET

## Multisystemic Therapy (MST)

Please note that in the ‘Intervention Summary’ table below ‘child age’, ‘level of need’, and ‘race and ethnicities’ information is **as evaluated in studies**. Information in other fields describes the intervention as **offered/supported by the intervention provider**.

Intervention summary	
<b>Description</b>	<p>Multisystemic Therapy (MST) is an intensive intervention for families with a young person aged 11 to 17, who are at risk of going into care due to serious antisocial and/or offending behaviour.</p> <p>An MST-trained social worker or psychologist provides home-based therapeutic support to the young person and their parents for a four-to-six-month period with the aim of doing ‘whatever it takes’ to improve the family’s functioning and the young person’s behaviour.</p>
<b>Evidence rating</b>	<p>4+*</p> <p>* Intervention’s evidence base includes mixed findings i.e., studies suggesting positive impact alongside studies that on balance indicate no effect or negative impact.</p>
<b>Cost rating</b>	5
<b>Child outcomes</b>	<ul style="list-style-type: none"> <li>• Supporting children’s health and wellbeing <ul style="list-style-type: none"> <li>- Improved emotional wellbeing</li> <li>- Improved mental health</li> <li>- Improved social competence.</li> </ul> </li> <li>• Preventing crime, violence and antisocial behaviour <ul style="list-style-type: none"> <li>- Reduced youth offending</li> <li>- Reduced delinquent behaviour</li> <li>- Improved behaviour.</li> </ul> </li> </ul>
<b>Child age</b> (Population characteristic)	11 to 17 years

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Intervention summary	
<b>Level of need</b> (Population characteristic)	Targeted Indicated
<b>Race and ethnicities</b> (Population characteristic)	<ul style="list-style-type: none"><li>• African American</li><li>• Asian</li><li>• Black African</li><li>• Black Afro-Caribbean</li><li>• White American</li><li>• White British.</li></ul>
<b>Type</b> (model characteristic)	Individual
<b>Setting</b> (model characteristic)	Home
<b>Workforce</b> (model characteristic)	<ul style="list-style-type: none"><li>• Social worker</li><li>• Psychologist.</li></ul>
<b>UK available?</b>	Yes
<b>UK tested?</b>	Yes

## Model description

Multisystemic Therapy (MST) is a ‘wrap-around’ family and community-based intervention for children and young people aged 11 to 17, where young people are at risk of an out-of-home placement in either care or custody due to their involvement in crime or severe antisocial behaviour.

The MST model assumes that youth offending behaviours are multi-determined by issues existing at the level of the child, family, school, and community. A master’s qualified social worker or psychologist works intensively with the child and family to do ‘whatever it takes’ to address these multiple risks, so that the young person can remain safely with their family, in school and out of trouble.

MST support is typically provided over a period of three to five months, with the MST therapist being on call to families 24 hours a day, seven days a week. The frequency and nature of the

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sessions vary, depending on the needs of the family and the stage of the treatment, typically ranging from three days a week to daily support.

At the beginning of the treatment, MST therapists discuss with each family member the potential root causes for the young person's behaviour and agree goals for treatment. The therapist will consult with the adolescent's school and other individuals from the community (for example, police and youth justice workers) involved in their case.

The therapist will then discuss with their MST supervisor various options to determine the best treatment 'fit' for the family. The therapist shares these ideas with the family and uses shared decision-making methods to help family members agree a treatment plan. The therapist and family members then review this plan on an ongoing basis to determine the extent to which it is meeting the family's needs.

A primary aim of the plan is to help family members identify strengths within their immediate family, extended family, and community. These strengths are then used to overcome weaknesses within the family system which may be contributing to the child's problematic behaviour.

The MST model assumes that the parents are the primary agents of change, so it is typical for plans to include intensive work with the parents to help them improve the quality of their relationship with their child. Typical examples of the kind of work MST therapists do include:

- Supporting the parents to implement effective behaviour management strategies
- Helping parents to develop appropriate attributions of their child's behaviour
- Working with parents to coordinate an effective response from other agencies, such as school or youth justice
- Family sessions that work on improving family communication
- Working with the parents to resolve conflict and improve communication
- Working with the young person to overcome specific problems, such as anger, impulsivity, or poor social skills
- Improving communication within the family
- Working with the parents and/or young person to address alcohol or substance misuse problems.

## Target population

<b>Age of child</b>	11 to 17 years
<b>Target population</b>	Families with a young person aged 11 to 17, who are at risk of going into care or custody due to serious antisocial and/or offending behaviour.

Please note that the information in this section on target population is as **offered/supported by the intervention provider**.



## Theory of change

Why		Who	How	What		
Science-based assumption	Science-based assumption	Science-based assumption	Intervention	Short-term outcomes	Medium-term outcomes	Long-term outcomes
Criminal and violent behaviour during adolescence increases the risk of criminal behaviour in adulthood and can significantly reduce a young person's future life chances.	Criminal and violent youth behaviour is multi-determined by risks associated with the child, family, school, and community.	Children at risk of out-of-home placement due to youth offending or violent behaviour are referred to the treatment.	<ul style="list-style-type: none"> <li>• The family receives 'wrap around' care that includes individual therapeutic support for the young person and parents</li> <li>• The therapist also advocates for the young person at school and the community.</li> </ul>	<ul style="list-style-type: none"> <li>• Improved parenting behaviours</li> <li>• Improved young person's behaviour</li> <li>• Improved family communication.</li> </ul>	<ul style="list-style-type: none"> <li>• Improved adolescent wellbeing</li> <li>• Improved social skills</li> <li>• Increased attendance at school or training.</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced risk of youth offending</li> <li>• Reduced risk of substance misuse</li> <li>• Reduced risk of criminal behaviour in adulthood.</li> </ul>



## Implementation requirements

<b>Who is eligible?</b>	Families with a young person aged 11 to 17, who are at risk of going into care or custody due to serious antisocial and/or offending behaviour.
<b>How is it delivered?</b>	<p>MST is delivered by a therapist to young people and families on an individual basis in their homes or other community settings. Therapists are available to the family 24/7 and carry a caseload of four to six families at a time.</p> <p>Therapy sessions typically last between 50 minutes and two hours.</p> <p>The frequency of the sessions may vary depending on the needs of the family and the stage of the treatment, typically ranging from three days a week to daily.</p>
<b>What happens during the intervention?</b>	<p>The MST model considers the parents as the primary agents of change. Each family's treatment plan therefore includes a variety of strategies to improve the parents' effectiveness and the quality of their relationship with their child. It is essential that these strategies 'fit' with each family's unique set of strengths and weaknesses.</p> <p>A key aim of the therapy is to identify strategies that work for each individual young person and family. Work is also undertaken with the network of formal and informal supports around the young person and family to improve family relationships with agencies such as schools but also to develop sustainable positive supports in the community.</p> <p>A second aim of the intervention is to help families assume greater responsibility for their behaviours and generate solutions and skills for solving their family problems now and in the future. A variety of evidence-based intervention strategies are used with individuals, families, and caregivers, including family sessions, role-plays, structural and strategic family therapy, parent training, including use of behaviour plans, safety planning, and cognitive behavioural therapy. There may also be specific targeted interventions for substance abuse in young people.</p> <p>The strategies follow a set of MST principles and the MST analytical process, so that problems are resolved in a strategic way with the families. All of these interventions are related to the aims of (1) reducing antisocial/offending and high-risk behaviours in young people, (2) keeping young people safely at home, improving family relationships and reducing out-of-home placement, and (3) helping support young people to be successful in school, work, and other community activities.</p>



<b>Who can deliver it?</b>	The practitioner who delivers this intervention is an MST therapist/practitioner with a master's qualification or higher in a helping profession.
<b>What are the training requirements?</b>	Practitioners receive 40 hours of intervention training (a five-day MST orientation). Booster training of practitioners is required.
<b>How are practitioners supervised?</b>	It is required that practitioners are supervised by one host-agency supervisor, with 40 hours of MST practitioner training plus 16 hours of MST supervisor training.  It is required that practitioners are supervised by one intervention developer supervisor.
<b>What are the systems for maintaining fidelity?</b>	Intervention fidelity is maintained through the following processes: <ul style="list-style-type: none"> <li>• Training manual</li> <li>• Other printed material</li> <li>• Other online material</li> <li>• Video or DVD training</li> <li>• Face-to-face training</li> <li>• Fidelity monitoring.</li> </ul>
<b>Is there a licensing requirement?</b>	Yes
<b>*Contact details</b>	<p>Contact person: Cathy James</p> <p>Organisation: MST</p> <p>Email address: <a href="mailto:cathy.james@kcl.ac.uk">cathy.james@kcl.ac.uk</a></p> <p>Website/s:</p> <p><a href="https://www.mstukandireland.org/">https://www.mstukandireland.org/</a></p> <p><a href="http://www.mstservices.com">www.mstservices.com</a></p> <p><a href="http://www.mstinstitute.org">www.mstinstitute.org</a></p> <p>*Please note that this information may not be up to date. In this case, please visit the listed intervention website for up to date contact details.</p>

## Evidence summary

MST is underpinned by a substantial number of rigorously conducted randomised controlled trials, observing mixed findings, which include studies showing long-term reductions in youth offending behaviour and out-of-home placements, as well as studies showing no effect in improving these



important outcomes. The rating of 4+ is based on MST's five most robust studies (including two conducted in the UK) with evidence consistent with Foundations' Level 3 evidence strength threshold. Two of these studies have evidence of the benefits lasting longer than 12 months, providing evidence that is consistent with Foundations' Level 4+ evidence strength threshold.

MST can be described as evidence-based: it has evidence from at least one rigorously conducted RCT or QED demonstrating a statistically significant positive impact on at least one child outcome, as well as at least one more RCT or QED. MST's evidence base includes mixed findings. It includes rigorously conducted studies suggesting positive impact alongside studies, which on balance, indicate no effect or negative impact.

Further information about MST's evidence base, including less positive findings, is provided in the more detailed summaries of the individual evaluations contributing to MST's rating. This evidence includes two recent studies conducted in Sweden and the UK observing no improvements in care placements and criminal offences in comparison to those observed in young people receiving usual care. It is worth noting, however, that the benefits and costs of MST are comparable to usual care in both of these studies, suggesting that MST remains an effective alternative to usual care.

Child outcomes			
Outcome	Improvement index	Interpretation	Study
Reduced internalising behaviour problems	+35 Long-term: 18 months later	5.73-point improvement on the Child Behaviour Checklist (Internalising Scale)	3
Reduced out-of-home placement	Not available Immediately after intervention	19.55-percentage point decrease in proportion of participants with out of home placements (measured using social services administrative records)	3a
Reduced out-of-home placement	+26 Long-term: 18 months later	25-percentage point decrease in proportion of participants with out of home placements (measured using social services administrative records)	3b
Reduced youth offending	+15 Long-term: 18 months later	28-percentage point decrease in proportion of participants offending (measured using police administrative records)	1



<b>Child outcomes</b>			
<b>Outcome</b>	<b>Improvement index</b>	<b>Interpretation</b>	<b>Study</b>
Reduced aggression	+6 6 months later	1.70-point improvement on the Child Behaviour Checklist	1
Reduced delinquency	+14 6 months later	3-point improvement on the Child Behaviour Checklist (Delinquency Scale - Parent report)	1
Reduced delinquency	+21 6 months later	17.4-point improvement on the Self Report of Youth Behaviour (Self Report)	1
Reduced delinquency	+5 Long-term: 18 months later	13.72-point improvement on the Self Report Delinquency Scale	3b
Reduced family-related civil court cases	+17 Long-term: 21.9-year after the intervention	17-percentage point decrease in proportion of participants being involved in family-related civil court cases (measured using court administrative records)	2c
Reduced psychopathic traits	+7 Immediately after the intervention	1.50-point improvement on the Antisocial Process Screening Device	1
Reduced reoffending (ever arrested)	+39 Long-term: 4 years after the intervention	45-percentage point decrease in proportion of participants ever being rearrested (measured using police administrative records)	2a
Reduced reoffending (ever arrested)	+31 Long-term: 13.7 after the intervention	31-percentage point decrease in proportion of participants ever being rearrested (measured using police administrative records)	2b





Child outcomes			
Outcome	Improvement index	Interpretation	Study
Reduced reoffending (ever arrested)	+19 Long-term: 21.9-year after the intervention	20-percentage point decrease in proportion of participants ever being rearrested (measured using police administrative records)	2c
Reduced anti-social behaviour	+5 Immediately after the intervention	0.10-point improvement on the Revised Behaviour Problem Checklist	2a
Reduced reoffending (number of times rearrested)	+21 Long-term: 13.7 years later	2.14 decrease in average number of arrests (measured using police administrative records)	2b
Reduced reoffending (number of times rearrested)	+13 Long-term: 21.9-year later	1.46 decrease in average number of misdemeanour arrests (measured using police administrative records)	2c
Reduced child behavioural problems	+19 Long-term: 18 months later	10.62-point improvement on the Child Behaviour Checklist	3b



## Search and review

	Number of studies
Identified in search	35
Studies reviewed	5
Meeting the L2 threshold	0
Meeting the L3 threshold	5
Contributing to the L4 threshold	4
Ineligible	30

## Individual study summary: Study 1

Study 1	
Study design	RCT
Country	United Kingdom
Sample characteristics	108 families with children aged 13 to 17 on a court order for treatment, a supervision order of at least three months duration, or, following imprisonment, on licence in the community for at least six months. 82% of the participants were male.
Race, ethnicities, and nationalities	<ul style="list-style-type: none"> <li>• 34.3% White British</li> <li>• 32.4% Black African</li> <li>• 23.1% Mixed ethnic background/Other</li> <li>• 4.6% Asian.</li> </ul>



Study 1	
<b>Population risk factors</b>	<p>Child participants had an average of more than two offences at intake (range 0–6). Over half the convictions included violent offences and 41% had only non-violent convictions.</p> <p>Less than 30% of the participants lived with both parents; over two-thirds lived with their mothers but not their fathers, and less than 10% with their fathers but not their mothers. Only one-third was in mainstream education.</p> <p>31% of the parents had left school with no academic qualifications; 40% had no vocational qualifications; and 54% were without income. In sum, almost all subjects lived in socioeconomically disadvantaged families.</p>
<b>Timing</b>	<ul style="list-style-type: none"> <li>• Baseline</li> <li>• Post-intervention</li> <li>• 12-month follow up</li> <li>• 18-month follow-up.</li> </ul>
<b>Child outcomes</b>	<p><i>Post-intervention</i></p> <ul style="list-style-type: none"> <li>• Reduced antisocial behaviour (Youth report)</li> <li>• Reduced youth psychopathic traits (Youth report)</li> <li>• Reduced antisocial behaviour (Parent report)</li> <li>• Reduced aggression (Parent report)</li> <li>• Reduced delinquency (Parent report).</li> </ul> <p><i>12-month follow-up</i></p> <ul style="list-style-type: none"> <li>• Reduced violent offences (Police records).</li> </ul> <p><i>18-month follow-up</i></p> <ul style="list-style-type: none"> <li>• Reduced violent offences (Police report)</li> <li>• Reduced total number of offences (Police report).</li> </ul>
<b>Other outcomes</b>	Improved positive parenting (Parent report)
<b>Study Rating</b>	3
<b>Citation</b>	Butler, S., Baruch, G., Hickey, N. & Fonagy, P. (2011) A randomized controlled trial of Multisystemic Therapy and a statutory therapeutic intervention for young offenders. <i>Journal of the American Academy of Child and Adolescent Psychiatry</i> . 50 (12), 1220–1235.



## Brief summary

### Population characteristics

This study involved a sample of 108 young people (aged 13 to 17) living in North London receiving support from the youth offending team, with an average of two offences or more at recruitment. Over half the convictions included violent offences.

34% were White British, 32% Black African/Caribbean, 24% mixed race, and 5% Asian. 82% of the participants were male.

Only a small minority was living with two parents at the time of the study; over two-thirds lived with their mothers but not their fathers, and less than 10% with their fathers but not their mothers. Only one-third was in mainstream education.

31% of their parents had left school with no academic qualifications; 40% had no vocational qualifications; and 54% were without income. In sum, almost all subjects lived in socioeconomically disadvantaged families.

### Study design

Fifty-six families were randomly assigned to MST and 52 were assigned to usual care by a stochastic minimisation programme (MINIM) balancing for type of offending (violent vs nonviolent), gender, and ethnicity. Usual care in the youth justice system was comprehensive, providing a range of tailored interventions in response to the needs of the child.

The groups were equivalent on all demographic characteristics and outcome measures at baseline.

### Measurement

Administrative data involving juvenile court and police records was collected at baseline (pre-intervention), 6, 12, and 18 months. The parent and child also completed a battery of measures at baseline and immediately after completing the intervention.

### Post-intervention

- **Youth report measures** included the Self-Report of Youth Behaviour (SBYB) of the Child Behaviour Checklist (CBCL) and the Antisocial Beliefs and Attitudes Scale (ABAS). Youth psychopathic traits was measured using the Antisocial Process Screening Device (APSD). Youth's involvement with delinquent peers was measured using Youth in Transition Study.
- **Parent report measures** included the Parent report version of the Child Behaviour Checklist (CBCL). Positive parenting was measured using Loeber et al.'s measure of positive parenting and disciplinary practices along with parent monitoring and supervision.

### 12- and 18-month follow-up

- **Administrative records** included police computer records of arrests and custodial sentences.



## Study retention

### *Post-intervention*

96% (104) of the study participants completed measures immediately post-intervention, including 95% (53) of the MST participants and 98% (51) of the young people receiving usual care.

### *12-month follow-up*

The police records were obtained for 99% (107) of the original participants.

### *18-month follow-up*

The police records were obtained for 99% (107) of the original participants.

## Results

### *Data-analytic strategy*

Using an intent-to-treat data analytic strategy, multi-level, mixed-effects Poisson regression models compared outcomes involving continuous findings and mixed-effects logistic regressions were used for binary data with participants treated as random effects.

### *Findings*

Although improvements were observed in both the MST and usual care groups, the benefits were significantly greater for young people receiving MST. Specifically, MST participants were significantly less likely to reoffend 18 months post-intervention, significantly more likely to report improvements in their behaviour, and report reductions in their psychopathic traits. Similarly, MST parents were significantly more likely to report improvements in their child's behaviour, and their own parenting behaviours.

## Study 1: Outcomes table

Outcome	Measure	Effect size	Statistical significance	Number of participants	Measurement time point
Child outcomes					
Antisocial behaviour	Self-Report of Youth Behaviour (SBYB) of the Child Behaviour Checklist (CBCL) (Youth report)	0.28	Yes	104	Post-intervention



<b>Outcome</b>	<b>Measure</b>	<b>Effect size</b>	<b>Statistical significance</b>	<b>Number of participants</b>	<b>Measurement time point</b>
Delinquency	Self-Report of Youth Behaviour (SBYB) of the Child Behaviour Checklist (CBCL) (Youth report)	N/A	No	104	Post-intervention
Aggression	Self-Report of Youth Behaviour (SBYB) of the Child Behaviour Checklist (CBCL) (Youth report)	N/A	No	104	Post-intervention
Antisocial behaviour	Child Behaviour Checklist (CBCL) (Parent report)	0.37	Yes	104	Post-intervention
Aggression	Child Behaviour Checklist (CBCL) – (Parent report)	0.41	Yes	104	Post-intervention
Delinquency	Child Behaviour Checklist (CBCL) – (Parent report)	0.45	Yes	104	Post-intervention
Beliefs and attitudes towards standards of acceptable behaviour in social and familial contexts	Antisocial Beliefs and Attitudes Scale (ABAS) (Parent report)	Not reported	No	104	Post-intervention



Outcome	Measure	Effect size	Statistical significance	Number of participants	Measurement time point
Youth psychopathic traits	The Antisocial Process Screening Device (APSD) (Youth report)	0.53	Yes	104	Post-intervention
Youth's involvement with delinquent peers	Youth in Transition Study (Youth report)	Not reported	No	104	Post-intervention
<b>Parent outcomes</b>					
Positive parenting	Loeber et al.'s measure of positive parenting and disciplinary practices along with parent monitoring and supervision (Parent report)	0.29	Yes	104	Post-intervention
Positive parenting	Loeber et al.'s measure of positive parenting and disciplinary practices along with parent monitoring and supervision (Youth report)	Not reported	No	104	Post-intervention
<b>Administrative records</b>					
Proportion with offence – Violent offences	Police computer records including custodial sentence	Not reported	Yes	107	12 months post-baseline



Outcome	Measure	Effect size	Statistical significance	Number of participants	Measurement time point
Proportion with offence – All offences	Police computer records including custodial sentence	Not reported	Yes	107	18 months (group effect over time)
Proportion with offence – Non-violent offences	Police computer records including custodial sentence	Not reported	Yes	107	18 months post-baseline

## Individual study summary: Study 2

Study 2	
<b>Study design</b>	RCT
<b>Country</b>	United States
<b>Sample characteristics</b>	176 youths aged 12 to 17 with a least two criminal arrests. 67.5% of the sample were male.
<b>Race, ethnicities, and nationalities</b>	<ul style="list-style-type: none"> <li>70% White American</li> <li>30% African American.</li> </ul>
<b>Population risk factors</b>	<ul style="list-style-type: none"> <li>68.8% of the families were of lower socioeconomic status</li> <li>The youths averaged 4.2 previous arrests. All of the youths had been detained previously for at least 4 weeks.</li> </ul>
<b>Timing</b>	<ul style="list-style-type: none"> <li>Baseline</li> <li>Post-intervention (Study 2a)</li> <li>4-year follow-up (Study 2a)</li> <li>13.7-year follow-up (Study 2b)</li> <li>21.9-year follow-up (Study 2c).</li> </ul>
<b>Child outcomes</b>	<i>Post-intervention</i> <ul style="list-style-type: none"> <li>Reduced psychiatric symptoms (Child report)</li> </ul>





Study 2	
	<ul style="list-style-type: none"> <li>• Reduced behaviour problems (Parent report)</li> <li>• Improved family functioning (family composite).</li> </ul> <p><i>Four-year follow-up</i></p> <ul style="list-style-type: none"> <li>• Reduced arrest and court involvement (administrative data).</li> </ul> <p><i>13.7-year follow-up</i></p> <ul style="list-style-type: none"> <li>• Reduced recidivism rate (administrative data)</li> <li>• Reduced relative risk of arrest (administrative data)</li> <li>• Reduced likelihood of rearrest (administrative data)</li> <li>• Reduced risk of arrest for violent offences (administrative data)</li> <li>• Reduced risk of arrest for nonviolent offences (administrative data)</li> <li>• Reduced risk of arrest for drug offences (administrative data)</li> <li>• Reduced number of arrests (administrative data)</li> <li>• Reduced days in adult confinement. (administrative data)</li> </ul> <p><i>21.9-year follow-up</i></p> <ul style="list-style-type: none"> <li>• Reduced risk of rearrest for felony criminal offence (administrative data)</li> <li>• Reduced risk of rearrest for violent felony offences (administrative data)</li> <li>• Reduced risk of rearrest for nonviolent felony offences (administrative data)</li> <li>• Reduced number of felony offence – odds estimate (administrative data)</li> <li>• Reduced number of misdemeanour offence – rate estimate (administrative data)</li> <li>• Reduced years sentenced – incarceration - odds estimate. (administrative data)</li> </ul>
<b>Other outcomes</b>	<p><i>Post-intervention (Study 2a)</i></p> <ul style="list-style-type: none"> <li>• Improved perceptions of family relations – Cohesion and Adaptability (parent report)</li> <li>• Improved family interaction – Supportiveness (observation measure)</li> <li>• Reduced family conflict (observation measure).</li> </ul>
<b>Study Rating</b>	3
<b>Citations</b>	<p><b>Study 2a:</b> Borduin, C. M., Mann, B. J., Cone, L. T., Henggeler, S. W., Fucci, B. R., Blaske, D. M. &amp; Williams, R. A. (1995) Multisystemic treatment of serious juvenile offenders: Long-term prevention of criminality and violence. <i>Journal of Consulting and Clinical Psychology</i>. 63, 569–578.</p> <p><b>Study 2b:</b> Schaeffer, C. M. &amp; Borduin, C. M. (2005) Long-term follow-up to a randomized clinical trial of Multisystemic Therapy with serious and</p>



## Study 2

violent juvenile offenders. *Journal of Consulting and Clinical Psychology*. 73, 445–453.

**Study 2c:** Sawyer, A. M. & Borduin, C. M. (2011) Effects of Multisystemic Therapy through midlife: A 21.9-year follow-up to a randomized clinical trial with serious and violent juvenile offenders. *Journal of Consulting and Clinical Psychology*. 79, 643–652.

## Brief summary

### Population characteristics

The study involved a sample of 176 youths (aged 12 to 17) with a least two criminal arrests living in the US state of Missouri. At the time of recruitment, 67.5% were male. 70.0% were White American, and 30.0% were African American.

53.3% lived with two parental figures that included biological parents, stepparents, foster parents, grandparents). The primary caretaker of the youths included biological mothers (88.0%), step-, foster, or adoptive mothers (6.5%), other female relatives (3.5%), or biological fathers (2.0%). Families averaged 3.1 children (SD=1.5)

68.8% of the families were of lower socioeconomic status (Class IV or V; Hollingshead, 1975). The youths averaged 4.2 previous arrests. All the youths had been detained previously for at least four weeks.

### Study design

92 youths were randomly assigned to MST and 84 youths to usual care (involving individual therapy) via a coin toss. The groups were equivalent at baseline on all demographic and outcome measures.

### Measurement

This was a long-term study, with measurement occurring at four time points: baseline (Pre-intervention), immediately post-intervention, four years post-baseline, 13.7 years post-baseline, and 21.9 years post-baseline.

### At baseline and immediately post-intervention (Study 2a)

- **Youth report measures** included the Child report version of the Symptom Checklist-90-Revised (SCL-90-R), and the Family Adaptability and Cohesion Evaluation Scales-II (FACES-II).
- **Parent report measures** included the Parent report versions of the SCL-90-R, the Revised Behaviour Problem Checklist (RBPC), and the Family Adaptability and Cohesion Evaluation Scales-II (FACES-II). Mothers also completed the maternal version of the Missouri Peer Relations Inventory (MPRI).



- **Teacher report measures** included the Missouri Peer Relations Inventory (MPRI).

The parents and their adolescent also participated in a video-recorded discussion involving the nine-item Unrevealed Differences Questionnaire—Revised that considered three dynamics of their interaction: supportiveness, verbal activity, and conflict-hostility (i.e. the amount of negativity in conversations).

### ***3-year follow-up (Study 2a)***

Juvenile court, local police, and Department of Public Safety (state police) records were collected an average of 3.95 years post-baseline.

### ***13.7-year follow-up (Study 2b)***

Arrest and incarceration records.

### ***21.9 year follow-up (Study 2c)***

Arrest, incarceration, and civil suit data.

## **Study retention**

### ***Post-intervention***

71% (126) of the study participants completed measures at post-intervention, including 76% (70) of the MST youths and their parents, and 67% (56) of the participants allocated to the control group.

There were no differences between the study drop-outs in the intervention and control groups on any key demographics or outcome measures.

### ***4-year follow-up***

Court records were obtained for 94.5% of the sample.

### ***13.7-year follow-up***

Arrest and incarceration data were obtained for 94% of the original sample, an average 13.7 (range 10.2–15.9) years post-baseline when participants were on average 28.8 years old.

### ***21.9-year follow-up***

Arrest, incarceration, and civil suit data were obtained for 84% (148) of the individuals participating in an MST 21.9-year (on average) post-intervention; representing 82% (75) of the original MST participants and 87% (73) of those allocated to the control group. Those not retained were no longer living in the state of Missouri. The characteristics of the retained MST group were not statistically different from those in the retained control group.



## **Results**

### ***Post-treatment***

#### **Data-analytic plan**

Composite scores were derived from 1) measures completed by the young people and parents, or 2) the parents and teachers. Repeated measures multivariate analyses of variance (MANOVAs) and ANOVAs were used to evaluate whether statistically significant pre-post treatment change was evident in the 70 MST and 56 control group families retained in the study.

#### **Findings**

The analyses observed statistically significant improvements in child and parent wellbeing, Parent reports of their adolescent's behaviour, family adaptability and cohesion, and coded observations of family interactions.

### ***Four-year follow-up***

#### **Data-analytic plan**

Survival analyses were used to compare the police and juvenile court records of young people receiving MST to those in the control group. This analysis involved the entire sample recruited to the study, including those who dropped out before randomisation.

#### **Findings**

The analyses observed that the overall recidivism rate for MST completers (22.1%) was less than one-third the overall rate for those in the control condition (71.4%), control condition dropouts (71.4%), treatment refusers (87.5%) and just under one-half the overall rate for MST dropouts (46.6%). Additionally, the study observed significantly fewer arrests amongst the young people in the MST group, and these arrests were for less serious crimes in comparison to those not receiving MST.

### ***13.7-year follow-up***

#### **Data-analytic plan**

Survival analyses involving 94% of the original sample were used to compare the arrest and incarceration records of young people receiving MST to those in the control group.

#### **Findings**

The study observed that young people receiving MST 14 years previously were significantly less likely to commit a crime than those who had not received the intervention. Additionally, MST participants had 54% fewer arrests and 57% fewer days of confinement in adult detention facilities in comparison to young people not receiving the treatment.



## 21.9-year follow-up

### Data-analytic plan

Survival analysis involving intent-to-treat was used to evaluate between-groups differences in length of time to the first occurrence of a criminal outcome (e.g. rearrest, civil suit). Zero-inflated Poisson (ZIP) regressions were also used to examine between group differences on continuous outcomes, such as number of rearrests, years sentenced, and civil suits.

### Findings

The analysis observed a statistically significant lower risk of rearrest for felony criminal offence for the MST group, including both violent and nonviolent felony offences. Those who had received MST 20+ years earlier were also less likely to be convicted of a felony and misdemeanour offence in comparison to youths receiving individual therapy, and the time served in prison was much shorter.

### Study 2: Outcomes table

Outcome	Measure	Effect size	Statistical significance	Number of participants	Measurement time point
Child outcomes					
Psychiatric symptoms	Symptom Checklist-90-Revised (SCL-90-R) (Child report)	Not reported	Yes	126	Post-intervention
Psychiatric functioning	Symptom Checklist-90-Revised  The Global Severity Index (Child report)	N/A	No	126	Post-intervention
Behaviour problems	Revised Behavior Problem Checklist (RBPC) (Parent report)	Not reported	Yes	126	Post-intervention
Parent outcomes					
Psychiatric symptoms	Symptom Checklist-90-Revised (SCL-90-	Not reported	Yes	126	Post-intervention



	R) (Mother report)				
Psychiatric symptoms	Symptom Checklist-90-Revised (SCL-90-R) (Father report)	Not reported	Yes	126	Post-intervention
<b>Family measures</b>					
Perceptions of family relations – Cohesion	Family Adaptability and Cohesion Evaluation Scales-II (FACES-II) (family composite)	Not reported	Yes	126	Post-intervention
Perceptions of family relations – Adaptability	Family Adaptability and Cohesion Evaluation Scales-II (FACES-II) (family composite)	Not reported	Yes	126	Post-intervention
Family interaction – Supportiveness (Observation measure)	Unrevealed Differences Questionnaire – Revised (mother–adolescent)	Not reported	Yes	126	Post-intervention
Family interaction – Verbal activity (Observation measure)	Unrevealed Differences Questionnaire – Revised (mother–adolescent)	Not reported	No	126	Post-intervention
Family interaction – Conflict-hostility (Observation measure)	Unrevealed Differences Questionnaire – Revised (mother–adolescent)	Not reported	Yes	126	Post-intervention



Family interaction – Supportiveness (Observation measure)	Unrevealed Differences Questionnaire – Revised (father–adolescent)	Not reported	Yes	126	Post-intervention
Family interaction – Verbal activity (Observation measure)	Unrevealed Differences Questionnaire – Revised (father–adolescent)	Not reported	No	126	Post-intervention
Family interaction – Conflict-hostility (Observation measure)	Unrevealed Differences Questionnaire – Revised (father–adolescent)	Not reported	Yes	126	Post-intervention
Family interaction – Supportiveness (Observation measure)	Unrevealed Differences Questionnaire – Revised (mother–father)	Not reported	Yes	126	Post-intervention
Family interaction – Verbal activity (Observation measure)	Unrevealed Differences Questionnaire – Revised (mother–father)	Not reported	No	126	Post-intervention
Family interaction – Conflict-hostility (Observation measure)	Unrevealed Differences Questionnaire – Revised (mother–father)	Not reported	Yes	126	Post-intervention
<b>Teacher measures</b>					
Adolescent's peer relations – peer bonding	Missouri Peer Relations Inventory (Teacher–mother composite)	N/A	No	126	Post-intervention



Adolescent's peer relations – peer aggression	Missouri Peer Relations Inventory (Teacher–mother composite)	N/A	No	126	Post-intervention
Adolescent's peer relations - social maturity	Missouri Peer Relations Inventory (Teacher–mother composite)	N/A	No	126	Post-intervention
<b>Administrative records</b>					
Arrest and court involvement (administrative data)	Police and juvenile court records	Not reported	Yes	140	Four-year follow-up
Recidivism rate	Arrest and incarceration records	Not reported	Yes	176	13.7-year follow-up
Relative risk of arrest	Arrest and incarceration records	Not reported	Yes	176	13.7-year follow-up
Likelihood of rearrest	Arrest and incarceration records	Hazard ratio: 0.58	Yes	176	13.7-year follow-up
Risk of arrest for violent offences	Arrest and incarceration records	Hazard ratio: $\beta = 0.84$	Yes	176	13.7-year follow-up
Risk of arrest for nonviolent offences	Arrest and incarceration records	Hazard ratio: $\beta = 0.57$	Yes	176	13.7-year follow-up
Risk of arrest for drug offences	Arrest and incarceration records	Hazard ratio: $\beta = 0.86$	Yes	176	13.7-year follow-up





Number of arrests	Arrest and incarceration records	Not reported	Yes	176	13.7-year follow-up
Days in adult confinement	Arrest and incarceration records	Not reported	Yes	176	13.7-year follow-up
Felony recidivism rates	Arrest, incarceration, and civil suit data	Not reported	Not reported	148	21.9-year follow-up
Risk of rearrest for felony criminal offence	Arrest, incarceration, and civil suit data	Hazard ratio: $\beta = 0.62$	Yes	148	21.9-year follow-up
Risk of rearrest for violent felony offences	Arrest, incarceration, and civil suit data	Hazard ratio: $\beta = 1.29$	Yes	148	21.9-year follow-up
Risk of rearrest for nonviolent felony offences	Arrest, incarceration, and civil suit data	Hazard ratio: $\beta = 0.51$	Yes	148	21.9-year follow-up
Time to each type of civil suit	Arrest, incarceration, and civil suit data	Not reported	No	148	21.9-year follow-up
Number of felony offence – odds estimate	Arrest, incarceration, and civil suit data	2.16	Yes	148	21.9-year follow-up
Number of misdemeanour offence – rate estimate	Arrest, incarceration, and civil suit data	5.04	Yes	148	21.9-year follow-up
Years sentenced – incarceration (odds estimate)	Arrest, incarceration, and civil suit data	2.35	Yes	148	21.9-year follow-up



Years sentences – probation	Arrest, incarceration, and civil suit data	Not reported	No	148	N/A
Number of civil suits – family instability	Arrest, incarceration, and civil suit data	Not reported	No	148	N/A
Number of civil suits – financial problems	Arrest, incarceration, and civil suit data	Not reported	No	148	N/A

## Individual study summary: Study 3:

Study 3	
<b>Study design</b>	RCT
<b>Country</b>	Norway
<b>Sample characteristics</b>	100 youths and their families referred to treatment for serious antisocial behaviour.
<b>Race, ethnicities, and nationalities</b>	95% Norwegian
<b>Population risk factors</b>	<ul style="list-style-type: none"> <li>• 30% youth had been suspended from school</li> <li>• 39% had been previously placed out of the home</li> <li>• 54% had a history of running away from home</li> <li>• 90% had a history of school truancy.</li> </ul>
<b>Timing</b>	<ul style="list-style-type: none"> <li>• Baseline</li> <li>• Post-intervention</li> <li>• Two-year follow-up.</li> </ul>
<b>Child outcomes</b>	<p><i>Post-intervention</i></p> <ul style="list-style-type: none"> <li>• Reduced child internalising behaviour (Parent, Youth and Teacher report)</li> <li>• Improved social competence (Parent, Youth and Teacher report).</li> </ul> <p><i>Two-year follow-up</i></p>



Study 3	
	<ul style="list-style-type: none"> <li>• Reduced likelihood to be placed out of home (administrative data)</li> <li>• Reduced youth antisocial behaviour (Youth report)</li> <li>• Reduced youth behavioural problems (Parent and Teacher report)</li> <li>• Reduced youth internalising behaviours (Parent and Teacher report)</li> <li>• Reduced youth externalising behaviours (Teacher report).</li> </ul>
Other outcomes	None
Study Rating	3
Citations	<p><b>Study 3a:</b> Ogden, T. &amp; Halliday-Boykins, C. A. (2004) Multisystemic treatment of antisocial adolescents in Norway: Replication of clinical outcomes outside of the US. <i>Child and Adolescent Mental Health</i>. 9 (2), 77–83.</p> <p><b>Study 3b:</b> Ogden, T. &amp; Hagen, K.A. (2006) Multisystemic Therapy of serious behaviour problems in youth: Sustainability of therapy effectiveness two years after intake. <i>Journal of Child and Adolescent Mental Health</i>. 11, 142–149.</p>

## Brief summary

### Population characteristics

The study involved a sample of 100 young people (average age 14.9 years) living in Norway (95% of whom were of Norwegian heritage), consisting of 64 boys and 37 girls. The participants were referred for a range of behavioural and mental health problems, including criminal offences.

### Study design

62 young people were randomly assigned to MST and 38 to usual care. Randomisation was weighted so that the participants had a 6/10 chance of receiving MST and a 4/10 chance of receiving usual child welfare services. Usual child welfare included individual therapy, as well as out-of-home placement, residential, and foster care.

### Measurement

Measurement took place at three time points: baseline, post-treatment, and at a two-year follow-up.

#### At baseline and post-treatment

- **Adolescent measures** included the Youth Self Report (YSR) of the Child Behaviour Checklist (CBCL), the Self-Report Delinquency Scale (SRD), the Social Competence with



Peers Questionnaire (SCPQ), 10 items from the Social Skills Ratings System (SSRS), and the Family Adaptability and Cohesion Evaluation Scales-III (FACES-III).

- **Parent measures** included the Parent report versions of the Child Behaviour Checklist (CBCL), the SCPQ, 10 items from the SSRS, FACES-III, and questions about the young person's out-of-home placement.
- **Teacher measures** included the Teacher report versions of the CBCL, the SCPQ, and 10 items from the SSRS.

### *Two-year follow-up*

- **Adolescent measures** included the Youth report versions of the Child Behaviour Checklist (CBCL) and the Self-Report Delinquency Scale (SRD).
- **Parent measures** included the Parent report versions of the CBCL and questions about the young person's out-of-home placement.
- **Teacher measures** included the Teacher report versions of the CBCL.

### *Post-intervention*

92% (92) of the original sample was retained in the study, representing 92% (57) of those allocated to MST and 92% (35) of those in the control group.

It is worth noting that early in treatment, four families withdrew from MST treatment (7% dropout). These families were replaced with four new families whose scores were used in the final analysis.

### *Two-year follow-up*

75% (75) of the participants from the original study were recruited to the two-year follow-up. This included 74% (46) of the MST participants and 76% (29) of those allocated to the control group. There were no significant differences between the families that withdrew from the research project and those remaining on any of the baseline measures. The extent to which this baseline equivalence was retained in the analytic sample was not reported.

Teacher reports were available for 51 of the participants (representing 51% of the sample); the extent to which baseline differences existed in this analytic sample was not reported.

## **Results**

### *Post-treatment*

#### **Data-analytic plan**

Composite scores were created for all measures where there were multiple informants. Repeated measures ANOVAs, controlling for site variation, were used to analyse the findings.

#### **Findings**

The study observed statistically significant improvements in the composite scores of the young people's externalising behaviours and social competence. Statistically significant improvements



were also observed in the out-of-home placements of the young people receiving MST in comparison to those receiving usual care.

Both the parents and young people in the MST group reported high levels of satisfaction with the intervention.

### *Two-year follow-up*

#### **Data-analytic plan**

Analyses of covariance (ANCOVAs) and chi-square analyses, controlling for baseline measures, were used to compare the effectiveness of MST to usual services, two years after intake.

#### **Findings**

The study observed statistically significant reductions in the MST young people's reports of antisocial behaviour in comparison to the young people receiving usual care. Similarly, their parents reported significant improvements in their child's behaviour and internalising symptoms, as well as a reduced number of out-of-home placements for boys only. Teachers also reported improvements in MST participants' externalising and internalising behaviours at school, but the lack of baseline equivalence reported for these comparisons increases the risk of bias for the findings.

#### **Study 3: Outcomes table**

Outcome	Measure	Effect Size	Significant	Sample size	Measurement time point
<b>Child outcomes</b>					
Child internalising behaviour	Child Behaviour Checklist (CBCL) – Internalising behaviour, Parent, youth and teacher composite	Not reported	Yes	96	Post-intervention
Child externalising behaviour	Child Behaviour Checklist (CBCL) – Externalising behaviour/Self-Report Delinquency Scale (SRD) (Youth report composite)	Not reported	No	96	Post-intervention
Child social competence	Child Behaviour Checklist (CBCL), Social Competence	Not reported	Yes	96	Post-intervention



	with Peers Questionnaire (SCPQ), and Social Skills Rating System (SSRS) (Parent, youth, and teacher composite)				
Antisocial behaviour	Self-report delinquency	Not reported	Yes	75	Two-year follow-up
Behaviour problems	Child Behaviour Checklist total behaviour problems (Youth report)	Not reported	No	75	Two-year follow-up
Externalising behaviours	Child Behaviour Checklist externalising (Youth report)	Not reported	No	75	Two-year follow-up
Internalising behaviours	Child Behaviour Checklist internalising (Youth report)	Not reported	No	75	Two-year follow-up
Behaviour problems	Child Behaviour Checklist total behaviour problems (Parent report)	Not reported	Yes	75	Two-year follow-up
Externalising behaviours	Child Behaviour Checklist externalising (Parent report)	Not reported	No	75	Two-year follow-up
Internalising behaviours	Child Behaviour Checklist internalising (Parent report)	Not reported	Yes	75	Two-year follow-up
Behaviour problems	Child Behaviour Checklist total behaviour problems (Teacher report)	Not reported	Yes	51	Two-year follow-up
Externalising behaviours	Child Behaviour Checklist externalising (Teacher report)	Not reported	Yes	51	Two-year follow-up



Internalising behaviours	Child Behaviour Checklist internalising (Teacher report)	Not reported	Yes	51	Two-year follow-up
Out-of-home placement	Parent reports of out-of-home placements (Parent report)	Not reported	Yes	96	Post-intervention
Out-of-home placements	Parent reports of whether the child was living at home at the time of the assessment and six months previously	Not reported	Yes*	75	Two-year follow-up
<b>Family outcomes</b>					
Family functioning – adaptability	Family Adaptability and Cohesion Evaluation Scales-III (FACES-III) – Adaptability (Parent and youth composite)	Not reported	No	96	Post-intervention
Family functioning – cohesion	Family Adaptability and Cohesion Evaluation Scales-III (FACES-III) – Cohesion (Parent and youth composite)	Not reported	No	96	Post-intervention

\*boys only

## Individual study summary: Study 4:

<b>Study 4</b>	
<b>Study design</b>	RCT
<b>Country</b>	Sweden
<b>Sample characteristics</b>	156 youths aged 12 to 17 who fulfilled the criteria for a clinical diagnosis of conduct disorder.



Study 4	
<b>Race, ethnicities, and nationalities</b>	<ul style="list-style-type: none"> <li>• 47% were not of Swedish heritage</li> <li>• 19% were from Asia</li> <li>• 16% were Europeans (outside of Scandinavia)</li> <li>• 9% were from Africa.</li> </ul>
<b>Population risk factors</b>	<ul style="list-style-type: none"> <li>• 67% of the youths had been arrested at least once and 32% had been placed outside of the home at some point during the six months before the study intake.</li> <li>• A large majority of the youths (67%) lived in a single-parent home. Of the mothers, 18% had a college education and 51% were unemployed. Of the families involved, 61% lived entirely or in part on social welfare grants.</li> </ul>
<b>Timing</b>	<ul style="list-style-type: none"> <li>• Baseline</li> <li>• Post-intervention</li> </ul>
<b>Child outcomes</b>	None
<b>Other outcomes</b>	None
<b>Study Rating</b>	NE
<b>Citation</b>	Sundell, K., Hansson, K., Löfholm, C.A., Olsson, T., Gustle, L. & Kadesjo, C. (2008) The transportability of Multisystemic therapy to Sweden: Short-term results from a randomized trial of conduct-disordered youths. <i>Journal of Family Psychology</i> . 22 (4), 550–560.

## Brief summary

### Population characteristics

156 young people known to youth justice services were recruited from three Swedish metropolitan areas. The sample consisted of 95 boys (61%) and 39 girls (39%) with an average age of 15 years.

53% of the participants were of Swedish heritage. 19% were Asian, 16% were non-Swedish Europeans and 9% were African. 67% lived in single-parent homes.

67% had one previous arrest and 32% had a previous out-of-home placement. The participants were eligible if they fulfilled the criteria for a DSM IV-TR diagnosis of conduct disorder and whose parents were willing to engage in the intervention. Youths were ineligible if there was a history of sexual offending, substance misuse, a serious cognitive difficulty or other mental health problem, or treatment in another facility.





## Study design

79 young people were randomly assigned to MST and 77 to services as usual control group. A mixed factorial design was used, with 50/50 random allocation between MST and treatment as usual groups.

Those assigned to the control group received individual therapy alongside a constellation of other youth offending services. MST youths received an average of six months of treatment.

## Measurement

Assessments were conducted at baseline and seven months after referral.

- **Youth report measures** included the Youth report versions (YSR) of the Child Behaviour Checklist (CBCL), the Self-Report Delinquency Scale (SRD), the shortened version of the Sense of Coherence Scale (SOCS), the Alcohol Use Disorder Identification Test (AUDIT), the Drug Use Disorder Identification Test (DUDIT), the 'Bad Friends' subscale from the Pittsburgh Youth Study (PYS) questionnaire, the Social Competence with Peers Questionnaire (SCPQ), and 10 items from the Social Skills Ratings System (SSRS).
- **Parent report measures** included the Parent report versions of the CBCL, a non-validated adaptation of a parenting measure used for the Håkan Stattin longitudinal study and self-reports of maternal mental health as reported on the Symptom Checklist-90 (SCL-90).
- **Administrative records** included school attendance records; casefile information about service use, including out-of-home placements.

## Study retention

96% (149) of the study sample completed measures seven months post-intervention, including 96% (76) of those receiving MST and 95% (73) of those allocated to the control group. Those who dropped out of the study did not differ substantially from those who remained on any of the baseline measures.

## Results

### *Data analytic plan*

A repeated measures analysis of variance and chi-squares were used to compare the MST and services as usual participants on all measures at the seven-month assessment. Single-variable imputation was used to account for inconsistencies in measurement completion, retaining the entire sample in the analyses.

### *Findings*

The study observed improvements on most outcomes in both the MST and services as usual groups, but the between group differences in these comparisons were not statistically significant.



## Study 4: Outcomes table

Outcome	Measure	Effect size	Statistical significance	Sample size	Measurement time point
<b>Youth outcomes</b>					
Psychiatric symptoms	Self-Report of Youth Behaviour (SBYB) of the Child Behaviour Checklist (CBCL)– Total (Youth report)	$d = 0.26$	No	156	Seven-month follow-up
Internalising symptoms	Self-Report of Youth Behaviour (SBYB) of the Child Behaviour Checklist (CBCL) (Youth report)	$d = 0.18$	No	156	Seven-month follow-up
Externalising symptoms	Self-Report of Youth Behaviour (SBYB) of the Child Behaviour Checklist (CBCL) (Youth report)	$d = 0.28$	No	156	Seven-month follow-up
Youth behavioural problems	Child Behaviour Checklist (CBCL) – Total (Parent report)	$d = 0.59$	No	156	Seven-month follow-up
Internalising symptoms	Child Behaviour Checklist (CBCL) – Internalising symptoms (Parent report)	$d = 0.38$	No	156	Seven-month follow-up
Externalising symptoms	Child Behaviour Checklist (CBCL) (Parent report)	$d = 0.56$	No	156	Seven-month follow-up
Youth social competence	Social Competence with Peers	$d = 0.07$	No	156	Seven-month follow-up



	Questionnaire (SCPQ) (Parent report)				
Sense of coherence	Sense of coherence (SOC) scale (Youth report)	$d = 0.21$	No	156	Seven-month follow-up
Self-reported delinquency	Self-Reported Delinquency Scale (SRD) (Youth report)	$d = 0.11$	No	156	Seven-month follow-up
Alcohol consumption (liters of pure alcohol)	Alcohol consumption (Youth report)	$d = -0.03$	No	156	Seven-month follow-up
Alcohol dependence raw scores	Alcohol dependence (Youth report)	$d = 0.02$	No	156	Seven-month follow-up
Drug dependence raw scores	Drug dependence (Youth report)	$d = -0.12$	No	156	Seven-month follow-up
Relationships with antisocial peers	Pittsburgh Youth Study (PYS) (Youth report)	$d = -0.25$	No	156	Seven-month follow-up
Youth social competence	Social Competence with Peers Questionnaire (SCPQ) (Youth report)	$d = 0.23$	No	156	Seven-month follow-up
Social skills	Social Skills Ratings System (SSRS) (Youth report)	$d = 0.25$	No	156	Seven-month follow-up
<b>Parent outcomes</b>					
Parenting skills	20-item measure adapted from Longitudinal	$d = 0.15$	No	156	Seven-month follow-up



	study by Håkan Stattin (Youth report)				
Parenting skills	20-item measure adapted from Longitudinal study by Håkan Stattin, (Caregiver report)	$d = 0.32$	No	156	Seven-month follow-up
Mother's mental health	Symptom Checklist-90 (SCL-90) (Maternal report)	$d = 0.31$	No	156	Seven-month follow-up
<b>Administrative records</b>					
Days in out-of-home care	Child protection records	Not reported	No	156	Seven-month follow-up
Days with services	Administrative records	Not reported	Yes	156	Seven-month follow-up

## Individual study summary: Study 5:

<b>Study 5</b>	
<b>Study design</b>	RCT
<b>Country</b>	United Kingdom
<b>Sample characteristics</b>	684 young people aged 11 to 17, with moderate-to-severe antisocial behaviour problems. 63% of the sample were male.
<b>Race, ethnicities, and nationalities</b>	<ul style="list-style-type: none"> <li>• 78% White British</li> <li>• 10% Black African/Afro-Caribbean</li> <li>• 7% British-Other</li> <li>• 2% Asian.</li> </ul>
<b>Population risk factors</b>	<ul style="list-style-type: none"> <li>• Most participants were receiving state benefits or had a household income less than 20k a year (75% for treatment group, 78% for control group).</li> </ul>



Study 5	
	<ul style="list-style-type: none"> <li>65% of the sample had persistent and enduring violent and aggressive interpersonal behaviour, more than 80% met DSM-IV criteria for any conduct disorder, and 26% had been permanently excluded from school for antisocial behaviour.</li> </ul>
<b>Timing</b>	<ul style="list-style-type: none"> <li>Baseline</li> <li>Post-intervention</li> <li>Approximately six-month follow-up (12 months after randomisation) Approximately 12-month follow-up (19 months after randomisation).</li> </ul>
<b>Child outcomes</b>	<ul style="list-style-type: none"> <li>Reductions in young people's self-reports of substance misuse at six months</li> <li>Improvements in young people's self-reported mood at six months</li> <li>Improvements in young people's self-reports of expressed emotion within the family at six months</li> <li>Improvements in Parent reports of the young people's behaviour</li> <li>Reductions in Parent reports of child ADHD symptoms at six months</li> <li>Reductions in young people's self-reports of behaviour and emotional problems at 12 months</li> <li>Improvements in young people's self-reported mood at 12 months.</li> </ul>
<b>Other outcomes</b>	<ul style="list-style-type: none"> <li>Improvements in Parent reports of parenting behaviours at six months</li> <li>Improvements in Parent reports of family cohesion at six months</li> <li>Improvements in Parent reports of family satisfaction at six months</li> <li>Improvements in Parent reports of family communication at six months</li> <li>Improvements in parental wellbeing at 6, 12, and 18 months.</li> </ul>
<b>Study Rating</b>	NE
<b>Citation</b>	Fonagy, P., Butler, S., Cottrell, D., Scott, S., Pilling, S., Eisler, I. ... & Ellison, R. (2018) Multisystemic therapy versus management as usual in the treatment of adolescent antisocial behaviour (START): A pragmatic, randomised controlled, superiority trial. <i>The Lancet Psychiatry</i> . 5 (2), 119–133.

## Brief summary

### Population characteristics

This study involved 684 young people aged 11 to 17, with moderate-to-severe antisocial behaviour problems living in 10 sites across England. 63% of the sample were male; 37% female. 78% were White British 10% were Black African/Afro-Caribbean, 7% were British-Other and 2% Asian.



65% of the sample had persistent and enduring violent and aggressive interpersonal behaviour, more than 80% met DSM-IV criteria for any conduct disorder, and 26% had been permanently excluded from school for antisocial behaviour.

## Study design

342 young people were randomly assigned to MST and 342 to a control group involving services as usual. Stochastic minimisation, stratifying for treatment centre, sex, age at enrolment to study, and age at onset of antisocial behaviour was used to balance the randomisation. The groups were equivalent at baseline, although slightly more young people with attention deficit hyperactivity disorder were in the MST group.

Services as usual coordinated the best available support from local services in keeping with the young person's needs. This meant that intensity of usual support was often equivalent to what was provided by MST.

## Measurement

Assessments took place at baseline and six, 12, and 18 months after randomisation.

- **Youth report** measures included the youth self-report versions of the Strengths and Difficulties Questionnaire (SDQ), the Inventory of Callous and Unemotional Traits (ICUT), the Self-Report Delinquency Measure, the Antisocial Beliefs and Attitudes Scale, the Youth Materialism Scale, the Mood and Feelings Questionnaire, the General Health Questionnaire, and the Development and Well-Being Assessment.
- **Parent report** measures included the Parent report versions of the SDQ, the ICUT, the attention deficit hyperactivity disorder subscales from the Conners Comprehensive Behaviour Rating Scales, Alabama Parenting Questionnaire (APQ), the Loeber Caregiver Questionnaire, the Family Adaptability and Cohesion Evaluation Scale (FACES II), the Level of Expressed Emotion Questionnaire, and the Conflict Tactics Scale.
- **Teacher report** measures included the attention deficit hyperactivity disorder subscales from the Conners Comprehensive Behaviour Rating Scales.
- **Administrative data** included out-of-home placement records; the first criminal offence and other criminal offences, including the proportion of violent and non-violent offences. Data on educational participation (attendance and exclusions) were obtained from the National Pupil Database.

## Study retention

### *Six-month assessment*

85% (585) of the original sample participated in the six-month assessments, including 89% (305) families allocated to MST and 82% (279) allocated to the services as usual control group. The extent to which the baseline similarities between these groups were retained across the two samples is not reported.



### ***12-month assessment***

76% (522) of the original sample participated in the 12-month assessments, including 79% (270) of the families allocated to MST and 74% (252) of those allocated to the services-as-usual control group. The extent to which the baseline similarities between these groups were retained across the two samples is not reported.

### ***18-month assessment***

72% (491) of the original study sample participated in the 18-month assessments, including 75% (257) of the families allocated to MST and 68% (234) of those receiving services-as-usual. The extent to which the baseline similarities between these groups were retained across the two samples is not reported.

Official records involving out-of-home placements and criminal convictions at the three time points were available for 99% of the children.

## **Results**

### ***Data-analytic plan***

Logistic regression analysis was conducted to compare out-of-home placements at 18 months for the two groups; Cox regression analysis for time-to-event outcomes was used to compare the first criminal offence. Linear mixed-effects models were used to analyse findings involving continuous outcomes, with adjustment for baseline values, and Poisson mixed models for count variables. For longitudinal outcomes, separate treatment effects for outcomes at 6 months, 12 months, and 18 months were used, together with two parameters representing the linear and quadratic time trends in the outcomes

Analyses involving administrative records involved the entire sample, so no missing data imputation was necessary. Missing data encountered in the child, parent and teacher assessments was imputed through inclusion of total number of offences committed at each six-month interval. As the findings were the same with and without the imputed data, no data substitution was used in the final reported analyses.

### ***Findings***

While few statistically significant differences were observed between the MST and usual services groups, statistically significant improvements were evident for MST participants during the first phases of the study. Specifically, MST adolescents were significantly more likely to report improvements in their emotional wellbeing on the SDQ and Mood and Feelings Questionnaire at 6 months and 12 months, although these benefits were no longer evident at the 18-month assessment.

Additionally, parents' perceptions of their child's behaviour, as well as improvements in their own parenting skills, family functioning and parental wellbeing were reported at the initial assessments. These improvements were particularly pronounced at the six-month assessment – when statistically significant improvements in child conduct, family functioning, and parental wellbeing



were observed. The only statistically significant advantage that remained for MST parents at the 18-month follow-up, however, was improvements in self-reported parental mood.

Most notably, MST did not appear to provide any statistically significant advantage when it came to the primary outcomes of interest, which included reductions in out-of-home placements, school exclusions, and criminal offences. While the risk of out-of-home placement was low for both groups (13%), the study observed a statistically significant increase in the mean number of offences committed by MST young people at the 18-month assessment.

## Study 5: Outcomes table

Outcome	Measure	Effect size	Statistical significance	Sample size	Measurement time point
<b>Child outcomes</b>					
Conduct problems	Strengths and difficulties scale (Youth report)	Not reported	No	585	Six months
Conduct problems	Strengths and difficulties scale (Youth report)	Not reported	No	522	12 months
Conduct problems	Strengths and difficulties scale (Youth report)	Not reported	No	491	18 months
Antisocial attitudes	Inventory of Callous and unemotional traits (Youth report)	Not reported	No	585	Six months
Antisocial attitudes	Inventory of Callous and unemotional traits (Youth report)	Not reported	No	522	12 months
Antisocial attitudes	Inventory of Callous and unemotional traits (Youth report)	Not reported	No	491	18 months
Variety of delinquent acts	Self-reported delinquency measure (Youth report)	Not reported	No	585	Six months
Variety of delinquent acts	Self-reported delinquency measure (Youth report)	Not reported	No	522	12 months
Variety of delinquent acts	Self-reported delinquency measure (Youth report)	Not reported	No	491	18 months





Volume of delinquent acts	Self-reported delinquency measure (Youth report)	Not reported	No	585	Six months
Volume of delinquent acts	Self-reported delinquency measure (Youth report)	Not reported	No	522	12 months
Volume of delinquent acts	Self-reported delinquency measure (Youth report)	Not reported	No	491	18 months
Variety of substance misuse	Self-reported delinquency measure (Youth report)	Not reported	No	585	Six months
Variety of substance misuse	Self-reported delinquency measure (Youth report)	Not reported	No	522	12 months
Variety of substance misuse	Self-reported delinquency measure (Youth report)	Not reported	No	491	18 months
Volume of substance misuse	Self-reported delinquency measure (Youth report)	Not reported	Yes	585	Six months
Volume of substance misuse	Self-reported delinquency measure (Youth report)	Not reported	No	522	12 months
Volume of substance misuse	Self-reported delinquency measure (Youth report)	Not reported	No	491	18 months
Peer delinquency	Self-reported delinquency measure (Youth report)	Not reported	No	585	Six months
Peer delinquency	Self-reported delinquency measure (Youth report)	Not reported	No	522	12 months
Peer delinquency	Self-reported delinquency measure (Youth report)	Not reported	No	491	18 months
Antisocial beliefs and attitudes	Antisocial beliefs and attitudes scale (Youth report)	Not reported	No	585	Six months



Antisocial beliefs and attitudes	Antisocial beliefs and attitudes scale (Youth report)	Not reported	No	522	12 months
Antisocial beliefs and attitudes	Antisocial beliefs and attitudes scale (Youth report)	Not reported	No	491	18 months
Antisocial beliefs and attitudes	Youth materialism scale (Youth report)	Not reported	No	585	Six months
Antisocial beliefs and attitudes	Youth materialism scale (Youth report)	Not reported	No	522	12 months
Antisocial beliefs and attitudes	Youth materialism scale (Youth report)	Not reported	No	491	18 months
Wellbeing and adjustment	Strengths and Difficulties Scale; Total score (Youth report)	Not reported	No	585	Six months
Wellbeing and adjustment	Strengths and Difficulties Scale; Total score (Youth report)	Not reported	Yes	522	12 months
Wellbeing and adjustment	Strengths and Difficulties Scale; Total score (Youth report)	Not reported	No	491	18 months
Wellbeing and adjustment	Strengths and Difficulties Scale; Impact score (Youth report)	Not reported	No	585	Six months
Wellbeing and adjustment	Strengths and Difficulties Scale; Impact score (Youth report)	Not reported	No	522	12 months
Wellbeing and adjustment	Strengths and Difficulties Scale; Impact score (Youth report)	Not reported	No	491	18 months
Emotional problems	Strengths and Difficulties Scale (Youth report)	Not reported	No	585	Six months
Emotional problems	Strengths and Difficulties Scale (Youth report)	Not reported	Yes	522	12 months



Emotional problems	Strengths and Difficulties Scale (Youth report)	Not reported	No	491	18 months
Hyperactivity	Strengths and Difficulties Scale (Youth report)	Not reported	No	585	Six months
Hyperactivity	Strengths and Difficulties Scale (Youth report)	Not reported	No	522	12 months
Hyperactivity	Strengths and Difficulties Scale (Youth report)	Not reported	No	491	18 months
Prosocial behaviour	Strengths and Difficulties Scale (Youth report)	Not reported	No	585	6 months
Prosocial behaviour	Strengths and Difficulties Scale (Youth report)	Not reported	No	522	12 months
Prosocial behaviour	Strengths and Difficulties Scale (Youth report)	Not reported	No	491	18 months
Wellbeing and adjustment	Moods and Feelings Questionnaire (Youth report)	Not reported	Yes	585	Six months
Wellbeing and adjustment	Moods and Feelings Questionnaire (Youth report)	Not reported	Yes	522	12 months
Wellbeing and adjustment	Moods and Feelings Questionnaire (Youth report)	Not reported	No	491	18 months
Conduct problems	Strengths and Difficulties Questionnaire – Conduct problems (Parent report)	Not reported	Yes	585	Six months
Conduct problems	Strengths and Difficulties Questionnaire – Conduct problems (Parent report)	Not reported	No	522	12 months



Conduct problems	Strengths and Difficulties Questionnaire – Conduct problems (Parent report)	Not reported	No	491	18 months
Wellbeing and adjustment	Strengths and Difficulties Scale; Total score (Parent report)	Not reported	Yes	585	Six months
Wellbeing and adjustment	Strengths and Difficulties Scale; Total score (Parent report)	Not reported	Yes	522	12 months
Wellbeing and adjustment	Strengths and Difficulties Scale; Total score (Parent report)	Not reported	No	491	18 months
Wellbeing and adjustment	Strengths and Difficulties Scale; Impact score (Parent report)	Not reported	Yes	585	Six months
Wellbeing and adjustment	Strengths and Difficulties Scale; Impact score (Parent report)	Not reported	No	522	12 months
Wellbeing and adjustment	Strengths and Difficulties Scale; Impact score (Parent report)	Not reported	No	491	18 months
Emotional problems	Strengths and Difficulties Scale (Parent report)	Not reported	Yes	585	Six months
Emotional problems	Strengths and Difficulties Scale (Parent report)	Not reported	Yes	522	12 months
Emotional problems	Strengths and Difficulties Scale (Parent report)	Not reported	No	491	18 months
Hyperactivity or inattention	Strengths and Difficulties Scale (Parent report)	Not reported	Yes	585	Six months
Hyperactivity or inattention	Strengths and Difficulties Scale (Parent report)	Not reported	Yes	522	12 months



Hyperactivity or inattention	Strengths and Difficulties Scale (Parent report)	Not reported	No	491	18 months
Prosocial behaviour	Strengths and Difficulties Scale (Parent report)	Not reported	Yes	585	Six months
Prosocial behaviour	Strengths and Difficulties Scale (Parent report)	Not reported	No	522	12 months
Prosocial behaviour	Strengths and Difficulties Scale (Parent report)	Not reported	No	491	18 months
ADHD symptoms	Conners Comprehensive Behaviour Rating Scales (Parent report)	Not reported	Yes	585	Six months
ADHD symptoms	Conners Comprehensive Behaviour Rating Scales (Parent report)	Not reported	No	522	12 months
ADHD symptoms	Conners Comprehensive Behaviour Rating Scales (Parent report)	Not reported	No	491	18 months
Youth ADHD symptoms	Conners Comprehensive Behaviour Rating Scales (Teacher report)	Not reported	No	585	Six months
Youth ADHD symptoms	Conners Comprehensive Behaviour Rating Scales (Teacher report)	Not reported	No	522	12 months
Youth ADHD symptoms	Conners Comprehensive Behaviour Rating Scales (Teacher report)	Not reported	No	491	18 months
Antisocial attitudes	Inventory of Callous and unemotional traits (Parent report)	Not reported	Yes	585	Six months
Antisocial attitudes	Inventory of Callous and unemotional traits (Parent report)	Not reported	No	522	12 months
Antisocial attitudes	Inventory of Callous and unemotional traits (Parent report)	Not reported	No	491	18 months



Parent outcomes					
Parenting Monitoring and Supervision	Alabama Parenting Questionnaire/Monitoring and Supervision (Youth report)	Not reported	No	585	Six months
Parenting Monitoring and Supervision	Alabama Parenting Questionnaire/Monitoring and Supervision (Youth report)	Not reported	No	522	12 months
Parenting Monitoring and Supervision	Alabama Parenting Questionnaire/Monitoring and Supervision (Youth report)	Not reported	No	491	18 months
Parenting Monitoring and Supervision	Alabama Parenting Questionnaire/Monitoring and Supervision (Parent report)	Not reported	Yes	585	Six months
Parenting Monitoring and Supervision	Alabama Parenting Questionnaire/Monitoring and Supervision (Parent report)	Not reported	No	522	12 months
Parenting Monitoring and Supervision	Alabama Parenting Questionnaire/Monitoring and Supervision (Parent report)	Not reported	No	491	18 months
Parental support	Loeber Caregiver Questionnaire (Parent report)	Not reported	Yes	585	Six months
Parental support	Loeber Caregiver Questionnaire (Parent report)	Not reported	No	522	12 months
Parental support	Loeber Caregiver Questionnaire (Parent report)	Not reported	No	491	18 months
Parental wellbeing	General health questionnaire (Parent report)	Not reported	Yes	585	Six months
Parental wellbeing	General health questionnaire (Parent report)	Not reported	Yes	522	12 months



Parental wellbeing	General health questionnaire (Parent report)	Not reported	Yes	491	18 months
<b>Family outcomes</b>					
Family functioning	Level of expressed emotions (Youth report)	Not reported	No	585	Six months
Family functioning	Level of expressed emotions (Youth report)	Not reported	No	522	12 months
Family functioning	Level of expressed emotions (Youth report)	Not reported	No	491	18 months
Family Satisfaction	Family Adaptability and Cohesion Evaluation Scale (Parent report)	Not reported	Yes	585	Six months
Family Satisfaction	Family Adaptability and Cohesion Evaluation Scale (parent report)	Not reported	No	522	12 months
Family Satisfaction	Family Adaptability and Cohesion Evaluation Scale (Parent report)	Not reported	No	491	18 months
Family Cohesion	Family Adaptability and Cohesion Evaluation Scale (Parent report)	Not reported	Yes	585	Six months
Family Cohesion	Family Adaptability and Cohesion Evaluation Scale (Parent report)	Not reported	No	522	12 months
Family Cohesion	Family Adaptability and Cohesion Evaluation Scale (Parent report)	Not reported	No	491	18 months
Family communication	Family Adaptability and Cohesion Evaluation Scale (Parent report)	Not reported	Yes	585	Six months
Family communication	Family Adaptability and Cohesion Evaluation Scale (Parent report)	Not reported	No	522	12 months



Family communication	Family Adaptability and Cohesion Evaluation Scale (Parent report)	Not reported	No	491	18 months
Family conflict	The Conflict Tactics Scale (Parent report)	Not reported	No	585	Six months
Family conflict	The Conflict Tactics Scale (Parent report)	Not reported	No	522	12 months
Family conflict	The Conflict Tactics Scale (Parent report)	Not reported	No	491	18 months
<b>Administrative records</b>					
Out-of-home placement	Proportion of cases assigned to long-term (Three months or longer) out-of-home placements	Not reported	No	675	18 months
Time to first offence	Official records from the Police National Computer and Young Offender Information System	Not reported	No	675	18 months
Proportion free of offending behaviour	Official records from the Police National Computer and Young Offender Information System	Not reported	No	675	Six months
Proportion free of offending behaviour	Official records from the Police National Computer and Young Offender Information System	Not reported	No	675	12 months
Proportion free of offending behaviour	Official records from the Police National Computer and Young Offender Information System	Not reported	No	675	18 months





All crimes	Official records from the Police National Computer and Young Offender Information System	Not reported	No	675	Six months
All crimes	Official records from the Police National Computer and Young Offender Information System	Not reported	No	675	12 months
All crimes	Official records from the Police National Computer and Young Offender Information System	Not reported	No	675	18 months
Violent crimes	Official records from the Police National Computer and Young Offender Information System	Not reported	No	675	Six months
Violent crimes	Official records from the Police National Computer and Young Offender Information System	Not reported	No	675	12 months
Violent crimes	Official records from the Police National Computer and Young Offender Information System	Not reported	No	675	18 months
Non-violent crimes	Official records from the Police National Computer and Young Offender Information System	Not reported	No	675	Six months
Non-violent crimes	Official records from the Police National Computer and Young Offender Information System	Not reported	No	675	12 months
Non-violent crimes	Official records from the Police National Computer and Young Offender Information System	Not reported	No	675	18 months

## Other studies

The following studies were identified for this intervention but did not count towards the intervention's overall evidence rating. An intervention receives the same rating as its most robust study or studies.



- Asscher, J. J., Deković, M., Manders, W. A., van der Laan, P. H., Prins, P. J. M. & the Dutch MST Cost-Effectiveness Study Group 4. (2013) A randomized controlled trial of the effectiveness of Multisystemic Therapy in the Netherlands: Post-treatment changes and moderator effects. *Journal of Experimental Criminology*. 9, 169–187.
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**Note on provider involvement:** This provider has agreed to Foundations' terms of reference (or the Early Intervention Foundation's terms of reference), and the assessment has been conducted and published with the full cooperation of the intervention provider.