Treatment Intervention Advisory Committee Review and Determination

Date: February 23, 2018

To: Wisconsin Department of Health Services

From: Wisconsin Department of Health Services Treatment Intervention Advisory Committee: LCK
Lana Collet-Klingenberg, Ph.D. (chairperson)

RE: Determination of Multisystemic Therapy as a proven and effective treatment for children and adults

☐ This is an initial review

☒ This is a re-review. Previously reviewed (rated) on July 26, 2013 (2), July 25, 2014 (3), July 2015 (3), and October 28, 2016 (4-ASD, 2-SED).

☐ No new research located; determination from month, year stands (details below)

Section One: Overview and Determination

Please find below a statement of our determination as to whether or not the committee views Multisystemic Therapy as a proven and effective treatment. In subsequent sections you will find documentation of our review process including a description of the proposed treatment, a synopsis of review findings, the treatment review evidence checklist, and a listing of the literature considered. In reviewing treatments presented to us by the Department of Health Services, we implement a review process that carefully and fully considers all available information regarding a proposed treatment. Our determination is limited to a statement regarding how established a treatment is with regards to quality research. The committee does not make decisions regarding funding.

Description of proposed treatment

Multisystemic Therapy® (MST®) is an intensive family- and community-based treatment that addresses the multiple causes of serious antisocial behavior across key settings, or systems within which youth are embedded (family, peers, school, and neighborhood). Because MST emphasizes promoting behavior change in the youth's natural environment, the program aims to empower parents with the skills and resources needed to independently address the inevitable difficulties that arise in raising teenagers, and to empower youth to cope with the family, peer, school, and neighborhood problems they encounter.

Within a context of support and skill building, the therapist places developmentally appropriate demands on adolescents and their families to reduce problem behavior. Initial therapy sessions identify the strengths and weaknesses of the adolescent, the family, and their transactions with extra familial systems (e.g., peers, friends, school, parental workplace). Problems identified by both family members and the therapist are explicitly targeted for change by using the strengths in each system to facilitate such change. Treatment approaches are derived from family therapy, structural family therapy, behavioral parent training, and cognitive behavioral therapy.

While MST focuses on addressing the known causes of delinquency on an individualized comprehensive basis, several types of interventions are typically identified for serious juvenile offenders and their families. At the family level, MST interventions aim to remove barriers to effective parenting (e.g., parental substance abuse, parental psychopathology, low social support, high stress, and marital conflict), to enhance parenting competencies, and to promote affection and communication among family members. Interventions might include introducing systematic monitoring, reward, and discipline systems; prompting parents to communicate effectively with each other about adolescent problems; problem solving day-to-day conflicts; and developing social support networks. At the peer level, interventions frequently are designed to decrease affiliation with delinquent and drug-using peers and to increase affiliation with pro-social peers. Interventions in the school domain may focus on establishing positive lines of communication between parents and teachers, parental monitoring of the adolescent's school performance, and restructuring after-school hours to support academic efforts. Individual level interventions generally involve using cognitive behavior therapy to modify the individual's social perspective-taking skills, belief system, or motivational system, and encouraging the adolescent to deal assertively with negative peer pressure.

Synopsis of current review (February 2018)
Committee members completing current review of research base: Shannon Stuart and Julie Harris

Please refer to the reference list (Section Four) which details the reviewed research.

The committee reviewed seven articles since the last review of MST.

Borduin and Dopp (2015) reviewed the economic impact of MST for problem sexual behaviors. They evaluated the cost and benefits of MST versus usual community services using arrest data obtained in an 8.9-year follow-up from a randomized clinical trial with 48 juvenile sexual offenders, who averaged 22.9 years of age at follow-up. The net benefit of MST over usual community services was calculated in terms of (a) the value to taxpayers, which was based on measures of criminal justice system expenses (e.g., police and sheriff's offices, court processing, community supervision); and (b) the value to crime victims, which was based on measures of both tangible (e.g., property damage and loss, health care, lost productivity) and intangible (e.g., pain, suffering, reduced quality of life) losses. Lower rates of post-treatment arrests in the MST versus usual community services conditions were associated with lasting reductions in expenses for both taxpayers and crime victims, with an estimated total benefit of $343,455 per MST-PSB participant. Stated differently, every dollar spent on MST recovered $48.81 in savings to taxpayers and crime victims over the 8.9-year follow-up.

The Schoenwald, Heiblum, Saldana, and Henggeler, (2015) article only reports an error in the acknowledgement section in 2008 article by the same authors. The 2008 article described challenges to MST transport internationally by virtue of the political, legal, economic, and cultural contexts in different nations.

Connell et.al. (2016), investigated re-arrest rates of a statewide MST dissemination and the relation of child, family, and case characteristics to re-arrest rates following receipt of MST. Analyses examined outcomes for 633 youth following referral to MST. Separate models examined predictors of general re-

arrest of any type and of more serious misdemeanor or felony arrests. Sixty-five percent of youth experienced a new arrest of any type within 12 months of MST initiation; fewer (53%) experienced a misdemeanor or felony charge in that time frame. Recipients who were younger, had an externalizing behavior disorder, and had a greater number and severity of pre-MST charges were more likely to recidivate. Their findings highlight potential child and case factors that may account for variability in treatment effects when MST is implemented broadly within a system.

Hanley (2016) completed a doctoral thesis at the University College London, exploring neural correlates of inhibition in children and adolescents with conduct problems following MST. This research did not examine the efficacy of MST, however. The author reviewed sixteen peer-reviewed studies, nine of which used event related potential (ERP) and seven used fMRI. They provided a mixed picture of neural correlates of inhibition in conduct problems. Only three studies found reduced ERP amplitude, to be related to conduct problems. Conduct problems were associated with reduced activation of regions related to inhibition, particularly the anterior cingulate cortex and inferior frontal gyrus. The review suggests that more research using both methods is required to establish a clear picture of the neural correlates of inhibition in young people with conduct problems. The findings are discussed in relation to competing models of inhibition in externalizing disorders.

Henggeler and Schaeffer (2016) conducted a literature review of 25 published RCTs conducted mostly by independent investigators that support the effectiveness of MST in treating very challenging clinical problems including violence, substance abuse, serious emotional disturbance, child maltreatment, and chronic health care conditions. Outcome research has yielded almost uniformly favorable results for youths and families, and implementation research has demonstrated the importance of treatment and program fidelity in achieving such outcomes. They also found that MST-related implementation research demonstrates the conditions needed for evidence-based interventions to be transported effectively and sustained in community settings.

Johnides, Borduin, Wagner, and Dopp, (2017). Examined the effects of MST on caregivers of serious juvenile offenders in a 20-year follow-up to a randomized clinical trial. Specifically, they examined the long-term criminal and noncriminal outcomes for caregivers of serious juvenile offenders who had participated two decades earlier in a randomized clinical trial of MST. Participants were 276 caregivers of serious juvenile offenders who were originally randomized to MST or individual therapy (IT). Criminal and civil suit data for caregivers were obtained during a 20.7-year follow-up when caregivers were on average 61.5 years old. They found that caregivers in the MST condition had 94% fewer felonies and 70% fewer misdemeanors than did caregivers in the IT condition. In addition, caregivers in the IT condition were sentenced to 92% more days of incarceration and had 50% more family-related civil suits. Moreover, the favorable long-term effects of MST on caregiver criminality and civil suits were mediated by improved family relations during treatment. Their study represents the only follow-up to date of caregivers in an MST clinical trial and demonstrates the broader clinical benefits of a family-based treatment for serious juvenile offenders.

Fonagy, et. al., (in press), conducted an 18 month, multisite, pragmatic, randomized controlled, superiority trial in England. Their findings do not support that MST should be used over “management as usual” as the intervention of choice for adolescents with moderate-to-severe antisocial behavior. Eligible participants aged 11-17 years with moderate-to-severe antisocial behavior had at least three severity criteria indicating past difficulties across several settings and one of five general inclusion

criteria for antisocial behavior. They randomly assigned families (1:1) using stochastic minimization, stratifying for treatment center, sex, age at enrolment to study, and age at onset of antisocial behavior, to receive either management as usual or 3-5 months of multisystemic therapy followed by management as usual. Research assistants and investigators were masked to treatment allocation; the participants could not be masked. The primary outcome was out-of-home placement at 18 months. The primary analysis included all randomized participants for whom data were available. This trial is registered, number ISRCTN77132214. Follow-up of the trial is still ongoing. Their current findings show that between Feb 4, 2010, and Sept 1, 2012, 1076 families were referred to nine multi-agency panels, 684 were assigned to "management as usual" (n=342) or MST followed by management as usual (n=342). At 18 months, the proportion of participants in out-of-home placement was not significantly different between the groups (13% [43/340] in the MST group versus 11% [36/335] in the management-as-usual group; odds ratio 1·25, 95% CI 0·77-2·05; p=0·37).

Committee's Determination: After reviewing the research and applying the criteria from the Treatment Review Evidence Checklist, it is the decision of the committee that Multisystemic Therapy (MST) receive an efficacy rating of Level 4 – Insufficient Evidence (Experimental Treatment) for children with Autism Spectrum Disorders and other Developmental Disabilities. However, for children with Severe Emotional Disturbance (SED), MST retains a Level 2 determination Level 2 – Established or Moderate Evidence (DHS 107 - Proven & Effective Treatment). .

Review history
(July 2016, finalized October 2016)
No new studies bearing on ASD were located for this 2016 review.

In the case of Multisystemic Therapy (MST), please refer to the reference listing that details the research previously reviewed from the July, 2013 and July, 2015 reviews. The committee's conclusions regarding MST include:

MST has focused primarily on emotionally disturbed individuals typically making contact with law enforcement. The extension to autism has been made on theoretical, not empirical, grounds, with the most recent article (Wagner et al. 2014; Reviewed in July, 2015) advancing MST as a model of therapy—not as an empirical evaluation of it. Data has not been provided to date that that directly tests in an experimental way the usefulness of MST for children with autism. The revised recommendation for MST specific to the treatment of ASD is that absent any empirical studies that have included individuals with ASD, is that at present there is Insufficient Evidence (Experimental Treatment).

After reviewing the research and applying the criteria from the Treatment Review Evidence Checklist, it is the decision of the committee that Multisystemic Therapy (MST) receive an efficacy rating of Level 4 - Insufficient Evidence (Experiemental Treatment) for ASD symptoms. However, for children with severe emotional disturbance (SED), MST retains an efficacy rating of Level 2 - Established or Moderate Evidence (DHS 107 - Proven & Effective Treatment).

(July 2015)
In the case of Multisystemic Therapy (MST), please refer to the attached reference listing that details the

research reviewed. The committee's conclusions regarding MST include that MST has focused primarily on emotionally disturbed individuals, variously categorized as emotionally disturbed, juvenile delinquents (including adjudicated youths), sexually promiscuous youth, drug addicted, and other disabilities typically making contact with law enforcement. The extension to autism has been made on theoretical, not empirical, grounds. Arguments for the application of MST to autism spectrum disorders (ASD) populations are largely based on analogy - most of it structural, not functional. For example, the most recent article reviewing MST applications to ASD is the Wagner et al (2014) review where such parallels as these are advanced to support MST's application to those with ASD:

- Juvenile delinquency's precursors are correlated with events in early development (page 2, paragraph 1).
- Aggression is common to both juvenile delinquency and autism (though the authors are quick to qualify this by saying that causes of aggression in ASD are not necessarily similar to those of MST's typical clientele).
- Additional correlates include poor mental health, communication disorders, and difficult interactions with caregivers, among other things.

This argument comes to a head with the point that ASD have multiple behavioral outcomes, their context plays an important part in therapy, and some parallels between MST and successful ASD therapies e.g., large-scale programs crossing numerous environments. Of course analogy is no homology and closing that gap requires the data that MST has yet to provide. Therefore the recommendation is that MST specific to the treatment of ASD is “Emerging” with the caveat that this ranking's empirical criterion is far less well met thane the demonstrated efficacy with non-ASD populations or in research previously reviewed whre ASD participants were aggregated with other populations.

No new studies bearing on ASD were located for 2015. The Wagner et al study (in progress) noted in the July 2014 MST TIAC remains the most recent article bearing on ASD but advances MST as a model of therapy—not as an empirical evaluation of it (see Wagner, D.V., Borduin, C.M., Kanne, S.K., Mazurek, M.O., Farmer, J.E., & Brown, R.M. (2014). Multisystemic therapy for disruptive behavior problems in youths with autism spectrum disorders: a progress report. Journal of Marital and Family Therapy, 40(33) ,319-331.)

In sum, it is the decision of the committee that in relation to the treatment of ASD symptoms, MST has retains a Level 3 ranking—Emerging Evidence (DHS 107-promising as a Proven Effective Treatment) status

(July 2014)
In the case of Multisystemic Therapy (MST), please refer to the attached reference listing that details the reviewed research. The committee’s conclusions regarding Multisystemic Therapy (MST) include:

- MST has focused primarily on emotionally disturbed individuals, variously categorized as emotionally disturbed, juvenile delinquents (including adjudicated youths), sexually promiscuous youth, drug addicted, and other disabilities typically making contact with law enforcement. The extension to autism has been made on theoretical, not empirical, grounds. Arguments for the application of MST to autism spectrum disorder (ASD) populations are largely based on analogy - most of it structural, not functional.

• For example, the most recent article reviewing MST applications to ASD is the Wagner et al (2014) review where such parallels as these are put forward as arguments for MST's application to those with ASD.
• Juvenile delinquency's precursors are correlated with events in early development (page 2, paragraph 3), aggression is common in juvenile delinquency and autism (though the authors are quick to qualify this by saying that causes of aggression in ASD are not necessarily similar to those of MST's typical clientele), and additional correlates include poor mental health, communication disorders, difficult interactions with caregivers, among other things. This argument comes to a head with the point that ASD has multiple behavioral outcomes, their context plays an important role in therapy, and some parallels between MST and successful ASD therapies e.g., large-scale programs crossing numerous environments.

Of course analogy is not homology and closing that gap requires the data that MST has yet to provide. Therefore the recommendation is that MST specific to the treatment of the symptoms of ASD is "Emerging" with the caveat that this ranking's empirical criterion is far less well met than the demonstrated efficacy with non-ASD populations or in research previously reviewed where ASD participants were aggregated with other populations.

In sum, it is the decision of the committee that in relation to the treatment of the symptoms of autism spectrum disorder, Multisystemic Therapy (MST) has met a Level 3 – Emerging Evidence (DHS 107 – Promising as a Proven & Effective Treatment) status.

(July 2013)
The committee reviewed 20 studies published in peer-reviewed journals that fell within acceptable parameters of experimental control. The majority of these studies were conducted by members of the same investigatory team, who are also the developers of MST. Nine studies are highlighted below (see Literature Reviewed) that (a) demonstrate adequate experimental control (random assignment of participants to treatment condition), (b) were conducted by individuals independent of the developers of MST, (c) were published in peer-reviewed journals, and (d) reported significant benefits of MST over a "usual" or "typical" treatment control condition. All of the studies targeted youth with serious emotional and behavioral disorders; however, none focused specifically on youth with ASD. Two studies (indicated by *) expressly included youth with ASD.

We also reviewed authoritative bodies that have reviewed MST within the last 10 years. At least one of these reviews was not in agreement with others about the level of evidence for MST.

One paper, to date, is currently "in press" that reports the use of MST specifically targeting youth with ASD who exhibit disruptive behavior problems. Results of a pilot test of MST with three youths with ASD is reported in this paper, and the progress of an efficacy trial that is currently underway is summarized (based on descriptive, not quantitative data): Wagner, D. V., Borduin, C. M., Kanne, S. M., Mazurek, M. O., Farmer, J. E. , & Brown, R. M A. (in press). Multisystemic therapy for disruptive behavior problems in youths with autism spectrum disorders: A progress report. Journal of Marital and Family Therapy.

A review of research evaluating the efficacy of Multisystemic Therapy reveals several well-designed studies (including randomized control trials) which, collectively, document that MST is (a) an effective

treatment for juvenile offenders, especially those with a diagnosis of Severe Emotional Disturbance (SED), and (b) a promising treatment for youth with ASD whose primary concerns include severe behavior disorders (and/or have a co-morbid SED diagnosis). Whereas a majority of studies have been carried out by a research team that includes one or more developers of MST, the committee identified nine studies that were completed by independent researchers. Moreover, although most efficacy trials have been conducted with juvenile offenders (many with an SED diagnosis), two studies included juveniles with ASD, and one funded grant project is currently underway that focuses exclusively on disruptive behavior problems in youths with ASD. Given this evidence base, it is the committee's conclusion that MST has achieved a Level 2 rating: Established or Moderate Evidence (DHS 7 – Proven and Effective Treatment).

Section Two: Rationale for Focus on Research Specific to Comprehensive Treatment Packages (CTP) or Models

In the professional literature, there are two classifications of interventions for individuals with Autism Spectrum Disorder (National Research Council, 2001; Odom et al., 2003; Rogers & Vismara, 2008):

(a) **Focused intervention techniques** are individual practices or strategies (such as positive reinforcement) designed to produce a specific behavioral or developmental outcome, and

(b) **Comprehensive treatment models** are "packages" or programs that consist of a set of practices or multiple techniques designed to achieve a broader learning or developmental impact.

To determine whether a treatment package is proven and effective, the Treatment Intervention Advisory Committee (TIAC) will adopt the following perspective as recommended by Odom et al. (2010):

The individual, focused intervention techniques that make up a comprehensive treatment model may be evidence-based. The research supporting the effectiveness of separate, individual components, however, does *not* constitute an evaluation of the comprehensive treatment model or "package." The TIAC will consider and review only research that has evaluated the efficacy of implementing the comprehensive treatment *as a package*. Such packages are most often identifiable in the literature by a consistently used name or label.

National Research Council. (2001). *Educating children with autism.* Washington, DC: National Academy Press.

Odom, S. L., Brown, W. H., Frey, T., Karusu, N., Smith-Carter, L., & Strain, P. (2003) Evidence-based practices for young children with autism: Evidence from single-subject research design. *Focus on Autism and Other Developmental Disabilities, 18,* 176-181.

Odom, S. L., Boyd, B. A., Hall, L. J., & Hume, K. (2010). Evaluation of comprehensive treatment models for individuals with Autism Spectrum Disorders. *Journal of Autism and Developmental Disorders, 40,* 425-436.

Rogers, S., & Vismara, L. (2008). Evidence-based comprehensive treatments for early autism. *Journal of Clinical Child and Adolescent Psychology, 37,* 8-38.

Section Three: TIAC Treatment Review Evidence Checklist

Name of Treatment: treatment modality to be reviewed

Level 1- Well Established or Strong Evidence (DHS 107 - Proven & Effective Treatment)

- ☐ Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, National Professional Development Center) have approved of or rated the treatment package as having a strong evidence base; authorities are in agreement about the level of evidence.
- ☐ There exist ample high quality studies that demonstrate experimental control and favorable outcomes of treatment package.
  - ☐ Minimum of two group studies or five single subject studies or a combination of the two.
  - ☐ Studies were conducted across at least two independent research groups.
  - ☐ Studies were published in peer reviewed journals.
- ☐ There is a published procedures manual for the treatment, or treatment implementation is clearly defined (i.e., replicable) within the studies.
- ☐ Participants (i.e., N) are clearly identified as individuals with autism spectrum disorders or developmental disabilities.

Notes: At this level, include ages of participants and disabilities identified in body of research

Level 2 – Established or Moderate Evidence (DHS 107 - Proven & Effective Treatment)

- ☒ Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, NPDC) have approved of or rated the treatment package as having at least a minimal evidence base; authorities may not be in agreement about the level of evidence.
- ☒ There exist at least two high quality studies that demonstrate experimental control and favorable outcomes of treatment package.
  - ☐ Minimum of one group study or two single subject studies or a combination of the two.
  - ☐ Studies were conducted by someone other than the creator/provider of the treatment.
  - ☐ Studies were published in peer reviewed journals.
- ☒ Participants (i.e., N) are clearly identified as individuals with autism spectrum disorders or developmental disabilities.

Notes: Participants ranged in age from 10-17 years. Participants included: (a) chrnoic juvenil offenders; (b) youth with substance abuse probnlems; (c) juvenile sexual offenders; (d) youth with SED; (e) youth with antisocial behaviors.

The following authoritative bodies have recognized MST as effective:
The United Nations Office on Drugs and Crime
(http://www.unodc.org/unodc/en/prevention/familyskillstraining.html.)

Public Safety Canada (http://www.publicsafety.gc.ca/serv/srch/index-eng.aspx?q=Multisystemic+Therapy)

Centers for Surgeon General (http://www.ncbi.nlm.nih.gov/books/NBK44295/)

The following authoritative body has not recognized MST as effective:
Littell, J., Popa, M., & Forsythe, B. (2005). Multisystemic Therapy for Social, Emotional and Behavioral Problems in Youth. Oslo, Norway: Campbell Corporation (international volunteer network of policymakers, researchers, practitioners, and consumers who prepare, maintain, and disseminate systematic reviews of studies of interventions in the social and behavioral science).

Level 3 – Emerging Evidence (DHS 107 – Promising as a Proven & Effective Treatment)

- ☐ Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, NPDC) have recognized the treatment package as having an emerging evidence base; authorities may not be in agreement about the level of evidence.
- ☐ There exists at least one high quality study that demonstrates experimental control and favorable outcomes of treatment package.
  - ☐ May be one group study or single subject study.
  - ☐ Study was conducted by someone other than the creator/provider of the treatment.
  - ☐ Study was published in peer reviewed journal.
- ☐ Participants (i.e., N) are clearly identified as individuals with autism spectrum disorders or developmental disabilities.

Notes: At this level, include ages of participants and disabilities identified in body of research

Level 4 – Insufficient Evidence (Experimental Treatment)

- ☐ Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, NPDC) have not recognized the treatment package as having an emerging evidence base; authorities are in agreement about the level of evidence.
- ☒ There is not at least one high quality study that demonstrates experimental control and favorable outcomes of treatment package.
  - ☐ Study was conducted by the creator/provider of the treatment.
  - ☐ Study was not published in a peer reviewed journal.
- ☒ Participants (i.e., N) are not clearly identified as individuals with autism spectrum disorders or developmental disabilities.

Notes: MST research emphasized individuals who typically were adolescents or young adults and were experiencing severe behavioral disorders not consistent with ASD.

Level 5 – Untested (Experimental Treatment) &/or Potentially Harmful

- ☐ Other authoritative bodies that have conducted extensive literature reviews of related treatments (e.g., National Standards Project, NPDC) have not recognized the treatment package as having an emerging evidence base; authorities are in agreement about the level of evidence.
- ☐ There are no published studies supporting the proposed treatment package.

- ☐ **There exists evidence that the treatment package is potentially harmful.**
  - ☐ Authoritative bodies have expressed concern regarding safety/outcomes.
  - ☐ Professional bodies (i.e., organizations or certifying bodies) have created statements regarding safety/outcomes.

Notes: At this level, please specify if the treatment is reported to be potentially harmful, providing documentation

References Supporting Identification of Evidence Levels:

Chambless, D.L., Hollon, S.D. (1998). Defining empirically supported therapies. *Journal of Consulting and Clinical Psychology, 66(1)* 7-18.

Chorpita, B.F. (2003). The frontier of evidence---based practice. In A.E. Kazdin & J.R. Weisz (Eds.). *Evidence-based psychotherapies for children and adolescents* (pp. 42---59). New York: The Guilford Press.

Odom, S. L., Collet-Klingenberg, L., Rogers, S. J., & Hatton, D. (2010). Evidence-based practices in interventions for children and youth with autism spectrum disorders. *Preventing School Failure, 54(4),* 275-282.

Section Four: Literature Review

Literature reviewed for current determination:

Borduin, C. M., Dopp, A. R. (2015). Economic impact of multisystemic therapy with juvenile sexual offenders. Journal of Family Psychology, 29(5), 687-696

Connell, C. M., Steeger, J. A., Schroeder, R. P., Franks, J., Kraemer, T. (2016). Child and case influences on recidivism in a statewide dissemination of multisystemic therapy for juvenile offenders. Criminal Justice and Behavior, 43(10), 1130-1346.

Fonagy, P., Butler, S., Cottrell, D., Scott, S., Pilling, S., Eisler, I., Fuggle, P., Kraam, A., Byford, S., Wason, J., Ellison, R., Simes, E., Ganguli, P., Allison, E., Goodyer, I. (in press). Multisystemic therapy versus management as usual in the treatment of adolescent antisocial behaviour (START): A randomised controlled pragmatic effectiveness superiority trial. The Lancet Psychiatry. doi 10.1016/S2215-0366(18)30001-4

Hanley, J.E. (2016) Neural correlates of inhibition in children and adolescents with conduct problems: An exploration of treatment effects following multisystemic therapy. Doctoral thesis. University College London. http://discovery.ucl.ac.uk/1524340/7/Hanley_Thesis_final_volume1_Hanley_redacted.pdf

Henggler, S. W. & Schaeffer, C. M. (2016). Multisystemic therapy: Clinical overview, outcomes, and implementation Research. Family Process, 55(3), 514-528.

Johnides, B. D., Borduin, C. M., Wagner, D. V., & Dopp, A. R. (2017). Effects of multisystemic therapy on caregivers of serious juvenile offenders: A 20-year follow-up to a randomized clinical trial. Journal of Consulting and Clinical Psychology, 85(4), 323-334.

Schoenwald, S. K., Heiblum, N., Saldana, L., & Henggeler, S. W. (2015). The international implementation of multisystemic therapy: Erratum. Evaluation & the Health Professions, 38(3), 429.

Literature reviewed for previous determinations:

1. Borduin, C. M., Schaeffer, C. M., & Heiblum, N. (2009). A randomized clinical trial of multisystemic therapy with juvenile sexual offenders: Effects on youth social ecology and criminal activity. Journal of Consulting and Clinical Psychology, 77, 26-37.

2. Borduin, C. M., Henggeler, S. W., Blaske, D. M. & Stein, R. (1990). Multisystemic treatment of adolescent sexual offenders. International Journal of Offender Therapy and Comparative Criminology, 35, 105-114

3. Brown, T. L., Henggeler, S. W., Schoenwald, S. K., Brondino, M. J., & Pickrel, S. G. (1999). Multisystemic treatment of substance abusing and dependent juvenile delinquents: Effects on school attendance at post-treatment and 6-month follow-up. Children's Services: Social Policy, Research, and Practice, 2, 81-93.

4. *Butler, S., Baruch, G., Hickley, N., & Fonagy, P. (2011). A randomized controlled trial of MST a statutory therapeutic intervention for young offenders. Journal of the American Academy of Child and Adolescent Psychiatry, 12, 1220-1235.

5. Dekovic, M., Asscher, J. J., Manders, W. A., Prins, P. J. M., & van der Laan, P. (2012). Within-intervention change: Mediators of intervention effects during multisystemic therapy. Journal of Consulting and Clinical Psychology, 80, 574-587

6. Glisson, C., Schoenwald, S. K., Hemmelgarn, A., Green, P., Dukes, D., Armstrong, K. S., & Chapman, J. E. (2010). Randomized trial of MST and ARC in a two-level EBT implementation strategy. Journal of Consulting and Clinical Psychology, 78, 537-550.

7. Henggeler, S. W., Clingempeel, W. G., Brondino, M. J., & Pickrel, S. G. (2002). Four-year follow-up of multisystemic therapy with substance abusing and dependent juvenile offenders. Journal of the American Academy of Child and Adolescent Psychiatry, 41, 868-874.

8. Henggeler, S. W., Melton, G. B., Brondino, M. J., Scherer, D. G., & Hanley, J. H. (1997). Multisystemic therapy with violent and chronic juvenile offenders and their families: The role of treatment fidelity in successful dissemination. Journal of Consulting and Clinical Psychology, 65, 821-833.

9. Henggeler, S. W., Melton, G. B., Smith, L. A., Schoenwald, S. K., & Hanley, J. H. (1993). Family preservation using multisystemic treatment: Long-term follow-up to a clinical trial with serious juvenile offenders. Journal of Child and Family Studies, 2, 283-293.

10. Henggeler, S. W., Rowland, M. D., Halliday-Boykins, C., Sheidow, A. J., Ward, D. M., Randall, J., Pickrel, S. G., Cunningham, P. B., & Edwards, J. (2003). One-year follow-up of multisystemic therapy as an alternative to the hospitalization of youths in psychiatric crisis. Journal of the American Academy of Child and Adolescent Psychiatry, 42, 543-551.

11. Letourneau, E. J., Henggeler, S. W., Borduin, C. M., Schewe, P. A., McCart, M. R., Chapman, J. E., & Saldana, L. (2009). Multisystemic therapy for juvenile sexual offenders: 1-year results from a randomized effectiveness trial. Journal of Family Psychology, 23, 89-102.

12. Ogden, T., & Halliday-Boykins, C. A. (2004). Multisystemic treatment of antisocial adolescents in Norway: Replication of clinical outcomes outside of the US. Child and Adolescent Mental Health, 9(2), 77-83.

13. Ogden, T., & Hagen, K. A. (2006). Multisystemic therapy of serious behaviour problems in youth: Sustainability of therapy effectiveness two years after intake. Journal of Child and Adolescent Mental Health, 11, 142-149.

14. Olsson, T. M. (2010). MST with conduct disordered youth in Sweden: Costs and benefits after 2 years. Research on Social Work Practice, 20, 561-571.

15. Sawyer, A.M., & Borduin, C.M. (2011). Effects of MST 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.

16. Schaeffer, C. M., & Borduin, C. M. (2005). Long-term follow-up to a randomized clinical trial of multisystemic therapy with serious and violent juvenile offenders. Journal of Consulting and Clinical Psychology, 73, 445-453.

17. *Stambaugh, L. F., Mustillo, S. A., Burns, B. J., Stephens, R. L., Baxter, B., Edwards, D., & DeKraai, M. (2007). Outcomes from wrap-around and multisystemic therapy in a center for mental health services system-of-care demonstration site. Journal of Emotional and Behavioral Disorders, 15, 143-155.

18. Sundell, K., Hansson, K., Lofholm, C. A., Olsson, T., Gustle, L. H., & Kadesjo, C. (2008). The transportability of MST to Sweden: Short-term results from a randomized trial of conduct disordered youth. Journal of Family Psychology, 22, 550-560.

19. Swenson, C. C., Schaeffer, C., Henggeler, S. W., Faldowski, R., & Mayhew, A. M. (2010). Multisystemic therapy for child abuse and neglect: A randomized effectiveness trial. Journal of Family Psychology, 24, 497-507

20. Timmons-Mitchell, J., Bender, M. B., Kishna, M. A., & Mitchell, C. C. (2006). An independent effectiveness trial of multisystemic therapy with juvenile justice youth. Journal of Clinical Child and Adolescent Psychology, 35, 227-236.

21. Wagner, D.V., Borduin, C.M., Kanne, S.K., Mazurek, M.O., Farmer, J.E., & Brown, R.M. (2014). Multisystemic therapy for disruptive behavior problems in youths with autism spectrum disorders: a progress report. Journal of Marital and Family Therapy, 40(33), 319-331.

*Articles were initially indicated as including participants with a diagnosis of ASD – however the October 2016 re-review was unable to corroborate this distinction.