Systematic review of Multisystemic Therapy: An update

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• Collaborators
  • Melania Popa Mabe & Burnee Forsythe – co-authors on original review
  • Margo Campbell, Stacy Green, Barb Toews – co-authors on update
Overview

- What is Multisystemic Therapy (MST)
- Research on effects of MST
  - Previous reviews
  - Cochrane/Campbell systematic review
  - Update of the systematic review
- Discussion

Multisystemic Therapy (MST)

- Intensive, short-term, family- and community-based intervention
- Used in juvenile justice, mental health, and child welfare settings
- To reduce out-of-home placements, improve youth & family functioning
- Emphasis on
  - adherence to 9 MST principles
  - staff training and support
  - Henggeler et al. (1998, 2002)
Previous reviews

- 86+ reviews of research on effects of MST published after 1996
  - more reviews than studies!
  - Assessed 66 reviews
  - Most were “lite” reviews (relied on other reviews)
- 37 reviews cited one or more primary studies
  - Analysis of review methods (Littell, 2008)
  - Most were traditional narrative summaries of convenience samples of published reports
  - Most conclude that MST “works” (is more effective than alternatives)

Multisystemic Therapy (MST)

- Appears on every relevant list of evidence-based practices for children, youth and families
- Blueprints model program
- Widely recognized
- Widely disseminated
Systematic review of MST

- Within Cochrane & Campbell Collaborations
  - Protocol published in 2004
  - Systematic review published in 2005
    - (Littell, Popa, & Forsythe, 2004, 2005)
    - Updating results now (with Campbell, Green, Toews)
- 4 articles in Children & Youth Services Review
  - “Lessons from a systematic review...” (Littell, 2005)
  - Debate with MST developers (Henggeler et al., 2006; Littell, 2006)
  - “Evidence-based or biased?” (Littell, 2008)

Objectives

- Test assertion that effects of MST are consistent across populations, problems, and settings (Kazdin, Landsverk, MST developers)
- If possible, assess effects of MST for subgroups:
  - Juvenile justice, mental health, child welfare contexts
  - USA vs other countries (different control group conditions in different countries)
  - Investigator independence (confounded with differences in implementation?)
MST systematic review:
Inclusion criteria

- Randomized controlled trials (RCTs) of
- Licensed MST interventions for
- Youth with social, emotional, and/or behavioral problems (not medical conditions)
- Any comparison condition (usual services, alternative treatment, no treatment)
- Original review includes studies reported before 2003
  - Latest search includes studies reported through June 2008, may be extended before update is complete
- No language or geographic restrictions

Search strategy

- Developed with information retrieval specialists
- Keyword searches of electronic databases and websites (listed in published protocol and SR) using:
  - (multisystemic OR multi-systemic) AND
  - (treat* OR therap*) AND
  - (evaluat* OR research OR outcome*)
- Scanned available reference lists
- Personal contacts
  - with program developers, PIs, other experts
## Search results & eligibility decisions

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<th>Update (new)</th>
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<td>Unique studies</td>
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<td>5</td>
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<tr>
<td>(Participant families)</td>
<td>(1268)</td>
<td>(423)</td>
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## Eligibility decisions

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<td>Not RCT</td>
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<tr>
<td>Medical problems</td>
<td>2</td>
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<td>Not licensed MST</td>
<td>3</td>
<td></td>
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<tr>
<td>No data on main effects</td>
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<td>Studies in progress</td>
<td>8</td>
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<td>Included studies</td>
<td>8</td>
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<td>Total</td>
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### Included studies (8 original)

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<th>Initial studies</th>
<th>Sample</th>
<th>Country</th>
<th>ITT?</th>
<th>Rank*</th>
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<tr>
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<tr>
<td>Borduin 1990</td>
<td>16 male sex offenders</td>
<td>USA</td>
<td>some</td>
<td>7</td>
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<tr>
<td>Borduin 1995</td>
<td>210 juvenile offenders (MDP)</td>
<td>USA</td>
<td>no</td>
<td>6</td>
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<tr>
<td>Henggeler 1992</td>
<td>94 juvenile offenders (FANS)</td>
<td>USA</td>
<td>no</td>
<td>4</td>
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<tr>
<td>Henggeler 1997</td>
<td>155 violent juvenile offenders</td>
<td>USA</td>
<td>some</td>
<td>3</td>
</tr>
<tr>
<td>Henggeler 1999a</td>
<td>120 juvenile offenders</td>
<td>USA</td>
<td>no</td>
<td>5</td>
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<tr>
<td>Henggeler 1999b</td>
<td>100 youth w severe psychiatric illness</td>
<td>USA</td>
<td>some</td>
<td>3</td>
</tr>
<tr>
<td>With MST developers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ogden 2002</td>
<td>104 youth w antisocial behavior, 4 sites</td>
<td>Norway</td>
<td>no</td>
<td>8</td>
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<tr>
<td>Independent</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Leschied 2002</td>
<td>409 juvenile offenders, 4 sites</td>
<td>Canada</td>
<td>yes</td>
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* Rank reflects overall quality assessment (ITT analysis, attrition, standardized observations)

### Included studies (new)

<table>
<thead>
<tr>
<th>Initial studies</th>
<th>Sample</th>
<th>Country</th>
<th>ITT?</th>
<th>Rank*</th>
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<td>By MST developers</td>
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<tr>
<td>Henggeler</td>
<td>76 youth w drug problems in 2 arms of drug court trial</td>
<td>USA</td>
<td>some</td>
<td></td>
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<tr>
<td>Rowland</td>
<td>31 youth w serious emotional disorders</td>
<td>USA</td>
<td>unclear</td>
<td></td>
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<tr>
<td>With MST developers</td>
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<tr>
<td>Timmons-Mitchell</td>
<td>100 youth w antisocial behavior, 4 sites</td>
<td>USA</td>
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<tr>
<td>Independent</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Miller (1996)</td>
<td>54 juvenile offenders in Delaware</td>
<td>USA</td>
<td>yes</td>
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<tr>
<td>Sundell</td>
<td>156 youth w conduct disorder, 4 sites</td>
<td>Sweden</td>
<td>yes</td>
<td>2</td>
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<tr>
<td>In progress (independent)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Weiss</td>
<td>Tennessee</td>
<td>USA</td>
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</table>

* Rank reflects overall quality assessment (ITT analysis, attrition, standardized observations)
New MST trials

- Studies by MST developers
  - Henggeler et al. Drug court, SC
    - 161 youth
    - 4 treatment arms:
      - Family court + Usual services (US)
      - Drug court + US (N=38)
      - Drug court + MST (N=38)
      - Drug court + MST + contingency management
  - Rowland et al. Hawaii
    - 15 MST vs 16 US (Continuum of Care) SED
    - Positive results at 6 months
    - Conflicting reports

- Semi-independent studies
  - Ohio
    - 106 (?) youth w antisocial behavior problems
    - 4 sites in Stark County, Ohio
    - Uses CAFAS (TOT)
    - initial concern that MST therapists were under-reporting family functioning problems at T2
New MST trials

- Independent studies
  - Sweden
    - 156 youth w conduct disorder
    - 4 sites, full ITT
    - Multiple measures of child and family functioning, out-of-home placements
    - no effects on any outcome vs TAU
  - Delaware
    - slow rate of referrals, high staff turnover
    - comparison group received residential treatment
    - no effects on recidivism at one year

Delaware

Figure Three:
Cumulative Recidivism for MST Participants & Control Group Members
New MST trials

- Independent studies
  - Tennessee - awaiting final report

New data from “old” studies

- New follow-up data
  - Ontario - no differences between MST and TAU (regular juvenile justice services)
  - Norway - 3 of 4 sites included in follow-up (awaiting data on 4th site)
  - MDP study – longitudinal follow-up on subsample
    - Will add this and do sensitivity analysis
### Out of home placement

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Subtotal (95% CI)</th>
<th>Total events</th>
<th>Heterogeneity: Tau²</th>
<th>Chi², df</th>
<th>I²</th>
<th>Test for overall effect: Z, P</th>
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<tbody>
<tr>
<td><strong>1.4.1 Incarceration</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>01 Leischold 2002</td>
<td>211</td>
<td>196</td>
<td>31.1%</td>
<td>1.08</td>
<td>1.61</td>
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<tr>
<td>04 Henggeler 1997</td>
<td>82</td>
<td>73</td>
<td>26.4%</td>
<td>0.59</td>
<td>1.12</td>
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<tr>
<td>05 Henggeler 1999a</td>
<td>58</td>
<td>60</td>
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<tr>
<td>06 Henggeler 1992</td>
<td>43</td>
<td>41</td>
<td>19.4%</td>
<td>0.12</td>
<td>0.33</td>
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<tr>
<td>Total (95% CI)</td>
<td>372</td>
<td>311</td>
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<td>0.61</td>
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<td><strong>1.4.2 Hospitalization</strong></td>
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<tr>
<td>03 Henggeler 1999b</td>
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<td>77</td>
<td>100.0%</td>
<td>1.06</td>
<td>1.08</td>
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<tr>
<td>Total (95% CI)</td>
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<td>153</td>
<td>100.0%</td>
<td>1.06</td>
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<td><strong>1.4.3 Composite</strong></td>
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<tr>
<td>02 Sundell</td>
<td>79</td>
<td>77</td>
<td>100.0%</td>
<td>1.07</td>
<td>2.04</td>
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<td>Total (95% CI)</td>
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<td>153</td>
<td>100.0%</td>
<td>1.07</td>
<td>2.04</td>
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### Self reported delinquency

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<th>Chi², df</th>
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<td><strong>4.1.1 ITT</strong></td>
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<td>29.84</td>
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<td>19 Rowland 2005</td>
<td>46.66</td>
<td>42.42</td>
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<tr>
<td>Subtotal (95% CI)</td>
<td>94</td>
<td>93</td>
<td>31.5%</td>
<td>-0.02</td>
<td>0.31</td>
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<td><strong>4.1.5 TOT</strong></td>
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<td>0.58</td>
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<td>-0.62</td>
<td>0.03</td>
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<td>142</td>
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<td>-0.21</td>
<td>0.00</td>
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<tr>
<td>296</td>
<td>235</td>
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<td>-0.13</td>
<td>-0.33</td>
<td>0.07</td>
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</table>
Summary: Effects of MST

- Inconsistent across studies
- No significant effects in most rigorous study
- Few effects in weaker studies, but none are significant on average (across studies)
- Suggests that MST is not consistently better or worse than other services
  - This does not mean that MST is ineffective

- Contrary to conclusions of other reviews
  - Which suggest that the effectiveness of MST is well established

Why do our results differ from those of prior reviews?

- Sampling methods
  - Traditional reviews prefer published reports, peer-reviewed journals
  - Vulnerable to publication, dissemination, and outcome reporting biases

- Lack of critical assessment of primary studies
  - RCTs: the gold standard for evaluation research, but all that glitters is not gold
  - Differential attrition
  - Allegiance bias (Luborsky et al., 1979, 1999, 2002)

- Confirmation bias in search for programs that “work”
Questions? Comments?

- Discussion

- Contact:
  - jlittell@brynmawr.edu