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The effectiveness of Multisystemic Therapy (MST): A meta-analysis

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HIGHLIGHTS

- A multilevel meta-analysis showed that MST has a small effect on delinquency.
- Small effects were found on five of the secondary outcomes.
- MST was most effective with non-ethnic minority, (sex)offending, younger juveniles.
- Larger effects were found with USA studies.
- Larger effects were found when MST was compared to a non-multimodal treatment.

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ABSTRACT

Multisystemic Therapy (MST) is a well-established intervention for juvenile delinquents and/or adolescents showing social, emotional and behavioral problems. A multilevel meta-analysis of $k = 22$ studies, containing 332 effect sizes, consisting of $N = 4066$ juveniles, was conducted to examine the effectiveness of MST. Small but significant treatment effects were found on delinquency (primary outcome) and psychopathology, substance use, family factors, out-of-home placement and peer factors, whereas no significant treatment effect was found for skills and cognitions. Moderator analyses showed that study characteristics (country where the research was conducted, efficacy versus effectiveness, and study quality), treatment characteristics (single versus multiple control treatments and duration of MST treatment), sample characteristics (target population, age, gender and ethnicity) and outcome characteristics (non-specific versus violent/non-violent offending, correction for pre-treatment differences, and informant type) moderated the effectiveness of MST. MST seems most effective with juveniles under the age of 15, with severe starting conditions. Furthermore, the effectiveness of MST may be improved when treatment for older juveniles is focused more on peer relationships and risks and protective factors in the school domain.

Contents

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1. Introduction

Multisystemic Therapy (MST) is a multi-faceted, short-term, home- and community-based evidence-based intervention for juvenile delinquents and juveniles with social, emotional and behavioral problems, disseminated in fourteen countries (MST Services Inc., 2010). The intervention is considered one of the few empirically supported and evidence-based treatments for conduct problems (see inter alia Littell, 2005). Moreover, it is one of few interventions targeting externalizing behavior problems that intensively monitors treatment integrity (Burns, Hoagwood, & Mrazek, 1999; Goense, Boendermaker, Van Yperen, Stams, & Van Laar, 2014).

MST is based on the premise that adolescent delinquency is associated with an accumulation of criminogenic risk factors (e.g., Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998), in particular individual, family, peer, school and neighborhood characteristics (Henggeler, 2011; Henggeler, Schoenwald, Borduin, Rowland, & Cunningham, 2009; Henggeler, Schoenwald, Rowland, & Cunningham, 2002). The idea that these factors should be targeted simultaneously finds its base in Bronfenbrenner's (1979) bio-ecological-system approach, which assumes that human behavior develops within and across contexts. MST mainly focuses on improving family functioning, because it is theorized that improvements in family functioning mediate improvements in peer relationships, school functioning and participation in the community (MST theory of change, Henggeler, 2011). Furthermore, the implementation of MST is highly flexible and designed to address specific individual risk factors. This is in line with the Risk–Need–Responsivity (RNR)-model (e.g., Andrews & Bonta, 2010; Andrews, Bonta, & Hoge, 1990; Andrews, Bonta, & Wormith, 2006), which states that judicial interventions should take into account the recidivism risk, and be matched to the criminogenic needs and learning style and capabilities of the individual.

Therapists visit the juveniles and their families at home and/or in their community to reduce drop-out rates, to provide treatment exactly where and when it is needed, and to increase generalizability of newly acquired skills. Moreover, the therapist is available twenty-four hours a day, seven days a week, and therapeutic sessions may take place up to everyday. MST uses well-established treatment strategies derived from strategic family therapy, structural family therapy, behavioral parent training and cognitive-behavioral therapy (Borduin, 1999). Finally, MST is accompanied by training and supervision, organizational support and adherence measures to monitor treatment integrity (Henggeler, 2011).

Since the first efficacy trial (Henggeler et al., 1986) and subsequent implementation of MST, the treatment has been implemented in a growing number of teams, regions and countries. The target population has expanded from delinquent and antisocial juveniles to abused and neglected juveniles (e.g., Brunk, Henggeler, & Whelan, 1987), sex offenders (e.g., Borduin, Henggeler, Blaske, & Stein, 1990), youth with psychiatric emergencies (e.g., Henggeler et al., 1999), substance-abusing and -dependent juveniles (e.g., Henggeler, Pickrel, & Brondino, 1999), youth with poorly controlled type I diabetes (e.g., Ellis et al., 2004), and juveniles with obesity (e.g., Naar-King et al., 2009). All of these variants have been examined at least once, resulting in a total of 20 published randomized controlled trials in 2012 (MST Services Inc., 2012).

With the growing number of randomized controlled studies, a meta-analysis of the effectiveness of MST became possible. To date, two of such meta-analyses have been conducted: one by dependent researchers, associated with the developers of MST (Curtis, Ronan, & Borduin, 2004), and the other by independent researchers (Littell, Campbell, Green, & Toews, 2005).

The first meta-analysis by Curtis et al. (2004) included published studies with random condition allocation about any available MST variant, resulting in eleven eligible studies, consisting of seven independent (non-overlapping) samples and a total of 708 juveniles, including delinquent juveniles, abused and neglected juveniles and youth at risk for psychiatric hospitalization. The meta-analysis yielded a moderate overall effect of MST compared to the control group ($d = .55$), and larger effect sizes were found specifically for family relationships compared to individual adjustment and peer relationships. Furthermore, optimal conditions of delivery showed larger effects than clinical representative conditions (i.e., efficacy versus effectiveness, Flay et al., 2005).

Shortly after publication of the Curtis et al. review, Littell et al. (2005) published their Cochrane systematic review of MST. Littell and colleagues also included non-published studies, which yielded different outcomes than published studies in the Curtis et al. review. Consequently, the Little et al. meta-analysis consisted of 21 studies from eight independent samples, and a total of 1230 juveniles for whom they found inconclusive evidence for the effectiveness of MST.

More than these contradictive outcomes, an article by Littell (2005) about methods used in systematic reviews raised controversy about the evidence-base of MST. Littell (2005) criticized the prior meta-analysis and previous MST research by questioning methodological quality of the studies and incomplete reports of randomization procedures. Additionally, an important point of criticism was the issue that few studies after MST were conducted independently of the MST developers. Notably, Petrosino and Soydan (2005) reviewed 50 meta-analyses of social interventions and conducted a meta-analysis of 300 randomized field trials of interventions targeting recidivism in order to examine the impact of dependency of researchers on study outcomes. They found that research conducted by dependent researchers yielded consistently and substantially larger effect sizes. Lipsey (1995), however, reported about similar findings in his 1992s meta-analysis that a higher level of treatment integrity, due to closely monitoring researchers, is an alternative explanation for the phenomenon Littell referred to as “program allegiance” or “conflicts of interest”.

Since these MST meta-analyses and their responses, the (international) research base for MST has grown. Consequently, it seems time to conduct a new meta-analysis. The main aim of the present multilevel meta-analysis therefore was to examine the impact of MST, specifically with juvenile offenders on delinquency (considered to be the primary outcome, because the initial goal of MST is to prevent delinquency) and on other behavioral and psychosocial outcomes (designated as secondary outcomes). Another aim was to assess moderators that may have an effect on the outcomes. These moderators included post-treatment effects on secondary outcomes, including psychopathology and parenting skills, outcome characteristics, such as informant type, sample characteristics, like age and gender, treatment characteristics, such as control treatment composition and – in line with the objections of Littell (2005) – study characteristics, including publication status and the (in)dependence of researchers.

This meta-analysis differs from both previous meta-analyses with respect to several aspects in order to be able to account for shortcomings of the previous analyses (i.e., exclusion of non-published studies,