

**A current review of Multisystemic Therapy: A social-ecological approach to the treatment of conduct problems among adolescents**

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*A current empirical review of the treatment efficacy of Multisystemic Therapy (MST) for adolescent conduct problems (CP) was conducted. Conclusions based on this review suggest that MST can be a very powerful alternative to the usual legal and social service approaches (e.g. justice system, day treatment programs) used in the treatment of adolescent CP. Assessment of the overall quality of this body of research identified strengths in the provision of MST across various treatment locations, the various dependent measures used in the research, and the long-term follow-up periods. Limitations included the lack of specificity in the descriptions of treatment and comparison groups, the direct links between the majority of researchers and MST model developers, the lack of quality assurance measures, and the over-interpretation of findings from correlational studies. MST continues to expand nationally and internationally with relatively little empirical substantiation on the world stage. This review calls for further empirical scrutiny of MST efficacy with consideration of the outlined limitations.*

In recent prevalence studies conducted in the United States, the United Kingdom, and New Zealand, it is estimated that 15% of adolescents demonstrate severely disruptive social behavior (Curtis, Ronan, & Borduin, 2004). In clinical circles, such behaviors are referred to as Conduct Problems (CP) (Mash & Barkley, 1998). CP of this magnitude contribute to various difficulties at many levels of personal well-being (e.g. parental stress), family functioning (e.g. relationship problems), and community (e.g. vandalism) (Borduin, Mann, Cone, Henggeler, Fucci, Blaske, & Williams, 1995). Between 1999 and 2003, approximately 50,000

Canadian youths per year were found guilty of engaging in criminal code offences (i.e. crimes against the person, property crimes, serious traffic violations, & drug offences) (Statistics Canada, 2006). Traditional methods of addressing this behavior consist primarily of incarceration and probationary services. Alternative methods aim to develop social skills and enhance family functioning. In recent years, methods designed to enhance social and family skills have been applied and studied quite extensively. It is now generally accepted that Conduct Problems are very complex, pervasive, and highly resistant to intervention (van de Wiel, Matthys, Cohen-Kettenis, & Engeland, 2002). As such, there is great need for highly efficacious and comprehensive treatment interventions. Multisystemic Therapy (MST) (Henggeler & Borduin, 1990) may represent one such approach to addressing CP.

*Conduct Problems: Classification & Theoretical Conceptualization*

Mash and Barkley (1998) use the broad term CP to describe a disorder that is characterized by a variety of severely disruptive behaviors. CP has a high prevalence rate, with estimations of between 2% and 10% (Costello, 1990). Although there are several established frameworks for classifying CP symptoms (Mash & Barkley, 1998), the DSM-IV TR (American Psychiatric Association, 2000) is most commonly drawn upon by clinicians. The DSM-IV TR presents a classification scheme for two types of CP, Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD). ODD is considered the milder of the two and is common in the early stages of CD. For a diagnosis of ODD, a minimum of four of the following symptoms must be present for at least six months: (1) losing temper, (2) arguing with adults, (3) refusal to comply with adult requests and rules, (4) deliberately annoying people, (5) failure to accept responsibility for misbehavior, (6) easily annoyed, (7) frequent anger and resentment, (8) spiteful and vindictive behavior.

CD is characterized by repetitive violation of the basic rights of others for at least a year. Specific symptoms are subsumed by four categories: (1) Aggression to People and Animals, (2) Destruction of Property, (3) Deceitfulness or Theft, and (4) Serious Violations of Rules. Childhood or

Adolescent Onset Type is diagnosed according to whether or not one or more symptoms present prior to, or after, ten years of age.

For both ODD and CD, these symptoms must be abnormally pronounced, impacting on one or more areas of social, academic, or occupational functioning. Evidently, CP symptoms are associated with various facets of a child's life. As such, theoretical frameworks developed to conceptualize the diverse symptoms associated with CP must account for complex transactions between children and their environment.

Due to its multi-level and multi-dimensional nature, CP appears to be most adequately explained through Bronfenbrenner's (1979) Social-Ecological Theory. This model presents a framework within which antisocial behavior is hypothesized to derive from various etiological sources including school, work, peers, and community. Since these are viewed as interconnected, dynamic, and reciprocal, CP is assumed to be maintained by problematic transactions between any combinations of these systems. Therapeutic practices based on this model address the dynamic interaction between various facets of a child's life rather than problems in isolation.

#### *Multisystemic Therapy*

Multisystemic Therapy (MST) is derived from the Social-Ecological framework (Henggeler & Borduin, 1990). It is an organized approach to delivering empirically supported treatment to youth with CP by targeting individual, family, school, peer, and community contributions to the CP.

There are nine principles that govern the application of MST (Borduin, 1994, p. 23). The nine principles are as follows: (1) the primary purpose of assessment is to understand the "fit" between the identified problems and their broader systemic context; (2) therapeutic contacts emphasize the positive, and use systemic strengths as levers for change; (3) interventions are designed to promote responsible behavior and decrease irresponsible behavior among family members; (4)

interventions are present-focused and action-oriented and they target specific and well-defined problems; (5) interventions target sequences of behavior within and between multiple systems that maintain the identified problems; (6) interventions are developmentally appropriate and fit the developmental needs of the youth; (7) interventions are designed to require daily or weekly effort by family members; (8) intervention effectiveness is evaluated continuously from multiple perspectives; and finally, (9) interventions are designed to promote treatment generalization and long-term maintenance of therapeutic change by empowering caregivers to address family members' needs across multiple systemic contexts.

These guidelines set MST apart from eclectic therapy by serving as a frame of reference for decision making during the therapeutic process. By targeting numerous socio-contextual factors, MST can take many different turns and directions. The guidelines listed above assist therapists in providing treatment in a predictable and scientific fashion in order to maximize its efficacy. Furthermore, treatment is strictly monitored by quality assurance measures (e.g. assessment of therapist fidelity, use of empirically validated methods only, and continuous training and skill development) (Borduin, 1994).

MST appears to be a comprehensive treatment for CP. Furthermore, it has well defined roots in Social Ecological Theory that provides a framework for describing the complex manner in which CP develop and impact various facets of life. Efficacy studies have made claims that MST is a viable alternative to the usual services offered to youths with CP. It would be unwise, however, to blindly accept these claims without prior scrutiny of the general quality of this body of research.

#### *Standards in Efficacy Research*

There are a number of research standards that are important for studies analyzing the efficacy of MST. First, specification of the treatment group and comparison group should be considered important. As noted, there is a vast array of symptoms that are associated with CP. Furthermore, CP is a disorder that is comorbid with ADHD, Anxiety, Depression,

Somatization Disorder (Loeber & Keenan, 1994), substance abuse, psychopathy (Frick, O'Brien, Wootton, & McBurnett, 1994), and underachievement in school (Hinshaw (1992). These problems can serve as confounding variables in the study of treatment, leaving the researcher uncertain as to the generalizability of the findings. As such, specificity of the treatment group is essential to sound efficacy research (Wilhelm, Tolin, & Steketee, 2004).

Furthermore, careful consideration should be employed during comparison group selection, as the decisions made during this process can easily dictate the final outcome (Parker, Parker, Malhi, Wilhelm, & Mitchell, 2004). Studies that use broad comparison groups (e.g. institutionalization) fail to describe the specific traditional approaches that are pitted against MST. Without specific descriptions of the comparison groups, it is very difficult to determine whether MST would be effective in new settings, where the traditional interventions may be quite different.

Treatment generalizability can also be enhanced through the replication of effects in numerous locations by many researchers Cunningham (2001). In this manner, researchers with a variety of motivating interests can test the treatment effect.

Sound efficacy studies should also use numerous measures of outcome to enhance the quality of the research. This would be particularly important in MST efficacy research, as it targets multiple systems of life (e.g. community, school, family, friends, health). Assessing the treatment effect on many criterion variables (e.g. internalizing, externalizing, recidivism) helps depict the breadth and depth of the treatment effect on many behavioral and emotional variables (Cunningham, 2001).

Another important point to demonstrate in efficacy studies is the endurance of treatment effect over prolonged periods. This is achieved by measuring treatment outcome over lengthy follow-up periods. Cunningham (2001) suggested that a follow-up period of at least one year should be considered in MST research.

Researchers engaged in demonstrating treatment efficacy must also be wary of problems associated with confirmation bias, as the preponderance of studies are conducted by researchers with direct links to the model developers. Confirmation bias occurs when people look for and interpret data in a manner that is consistent with preconceived beliefs (Evans, 1989; Nickerson, 1998). Conversely, data, which conflicts with these beliefs, tends to be ignored. This could easily lead to the reporting of false positive treatment effects. In order to reduce this possibility, MST efficacy studies should also be conducted by researchers who are not directly linked to the development of MST.

Finally, sound MST efficacy studies should include measures designed to maximize adherence to MST procedures. The measures taken to ensure that therapists are adhering to the main tenets include monitoring, instrumental assessment of fidelity, supervision, and training. Studies have demonstrated that straying from the MST plan leads to diminished results (Henggeler et al., 1997; Schoenwald, Sheidow, & Letourneau, 2003).

#### *The Direction for the Current Review*

Testing MST efficacy has been the focus of a growing body of research. A recent empirical review by Henggeler and Lee (2003) includes 14 studies conducted from 1986 through 2002 (Henggeler et al., 1986; Brunk, Henggeler, & Whelan, 1987; Borduin, Henggeler, Blaske, & Stein, 1990; Henggeler et al., 1991; Henggeler, Melton, & Smith, 1992; Henggeler et al., 1993; Borduin et al., 1995; Henggeler, et al., 1997; Henggeler, Rowland, et al., 1999; Schoenwald et al, 2000; Henggeler, Pickrel, & Brondino, 1999; Schoenwald et al., 1996; Brown et al., 1999, Henggeler et al., 2002).

The scope of the Henggeler and Lee (2003) review was quite broad, including studies examining MST effectiveness with violent juvenile offenders, youths in maltreating families, adolescent sexual offenders, youths with psychiatric emergencies, and substance abusers. This empirical review, in contrast, sets out to examine the efficacy of MST when applied to address adolescent CP, as defined by Mash & Barkley

(1998). Furthermore, it is more recent than the Henggeler and Lee review, it includes researchers who are not directly affiliated with MST model development and includes studies from outside the United States. Lastly, this review summarizes, compares, contrasts, and critiques relevant studies, whereas Henggeler and Lee provide more of a descriptive overview of published clinical trials.

The value of conclusions drawn from this review is enhanced by the application of research standards considered important in MST efficacy studies. Finally, suggestions for improvement and future directions are based on the review itself.

This review of Multisystemic Therapy utilized five online databases to identify pertinent studies: Psychology and Behavioral Sciences Collection, PsycINFO, Science Direct, ProQuest Digital Dissertations, and the Canadian National Crime Prevention Centre. Searches were directed using key lexical qualifiers, Multisystemic and MST. The selection of studies for review was guided by the following inclusion criteria based on program legitimacy, research goals, and participant demographics: (a) licensed MST programs served as treatment focus; (b) peer reviewed empirical studies (primary & secondary), dissertations, or Canadian federal government studies published between 1995 and 2006; (c) data reflected treatment response outcomes; (d) participants between 10 and 18 years of age; and (e) participants with histories of violent, aggressive, and oppositional acts, were included in the sample (i.e. no participants were exclusively substance abusers, sex offenders, or psychotics).

Using these criteria, 12 studies were identified and evaluated with respect to their consideration of the following standards that were identified earlier as important in MST efficacy research. These include the following: (a) specificity of treatment group; (b) specificity of comparison groups; (c) treatment locations; (d) outcome measures; (e) follow-up period; (f) affiliation of researchers with MST model developers; (g) and adherence to the MST model.

Borduin, Mann, Cone, Henggeler, Fucci, Blaske, and Williams (1995) conducted a Pre-test/Post-test controlled study in Missouri to assess MST versus Individual Therapy (IT) outcomes for 176 juvenile offenders, aged 11 to 17, at high risk for committing further offences. Other participant demographics related to gender and race: 67.5% males, 30% African-American, 70% Caucasian, and 53% more than one parent. Instrumental results were gathered using multiple measures of individual adjustment, family relations, and peer relations. At post-treatment, this study reported the following significant effects favoring MST. Parental reports of personal psychiatric symptoms, child behavior, and family functioning (i.e. cohesion and adaptability) showed benefits from MST. In contrast IT treatment produced no benefit or actual deterioration on these variables.

In an effort to determine the long-term effects of the treatment programs, recidivism rates were collected four years post-treatment on 94% of the original sample. This data, which was obtained through official court, police, and Department of Public Safety documents, revealed a recidivism rate of only 26% for the MST group compared to 71% for the IT group. Furthermore, a hierarchical multiple regression analysis revealed that recidivism rates for violent crimes were significantly less for MST youth compared to those in the IT condition.

Schaffer (2001), a graduate student of Borduin used this sample, as well as, other archived (non-randomized) participants from the same area to study the moderators and mediators of MST outcomes at 10 years post-treatment. MST participants demonstrated 50% fewer arrests, 33% fewer days on probation as adults, and 60% fewer days in prison compared to participants who received IT or US. Participants from single parent families demonstrated less improvement on instrumental outcomes. Furthermore, improved family functioning was found to directly predict lower recidivism rates for the MST group. Finally, family engagement in MST mediated the relation between high family adversity and early dropout.

Using a randomized Pre-test / Post-test design, Henggeler, Melton, Brondino, Sherer, and Hanley (1996) set out to compare the efficacy of



MST with standard juvenile justice services (US) in treating 155 violent or chronic juvenile offenders in South Carolina. The participants represented relatively diverse cultural and geographical demographics: a predominantly Caucasian group (77.8%) from urban and rural locations; and, a predominantly African-American group (58.4%). The results were collected through multiple measures, including adolescent emotional well being, behavior problems, self-reported criminal activity, arrest and incarceration histories, family relations, parenting skills, and peer relations. MST adherence was also assessed to determine whether or not treatment fidelity served as a moderator of observed outcome. Upon follow-up 1.7 years post-treatment, MST was found to decrease incarceration levels by 47% compared with the US group.

The results of this study did not reflect as favorably on MST as those in previous studies. This was attributed to the fact that weekly supervision and monitoring of protocol adherence was not incorporated in the design of the study. In further support of the adherence argument, Huey, Henggeler, Brondino, and Pickrel (2000) conducted a study to assess the mechanisms through which MST decreased delinquent behavior in two samples of offenders. Sample one consisted of the participants from the Henggeler et al. (1996) project, while sample two consisted of participants presenting psychiatric emergencies and, as such, is not considered in the current review. In this study, therapist adherence to MST protocol was associated with improved family relations (i.e. cohesion, functioning, & parent monitoring), decreased delinquent peer affiliation, and decreased delinquent behavior.

In Ontario, Canada, a four-year efficacy study of MST and usual services (US) was launched to determine if the results found in the United States could be replicated (Cunningham, 2001) This was a scientifically rigorous design with strict randomization, a control group, and a relatively large sample of 409 adolescents, aged 10 to late teens (i.e. ages varied slightly according to area need and funding requirements). A number of variables were studied in relation to family functioning, youth functioning, crime severity, conviction, and cost-effectiveness. The researchers were not able to recommend the implementation of MST as an effective, cost-saving treatment for the population of youthful

offenders in Ontario as there were no significant differences found between MST and US on any of the variables assessed.

Oakley (2001) conducted a smaller scale study, drawing upon some of the participants, 58 males and females, of the larger Ontario study. The purpose was to assess MST versus US effectiveness on school outcomes, an area that was not considered in the larger study. The results were mainly consistent with the large-scale findings. Participants in the MST group reported no significant discrepancies regarding family-school link or affinity for school compared to the US group. MST was, however, more effective than US in students staying in school during the course of treatment, and in being enrolled in a community school post-treatment. Although further follow-up results are expected, at this time, the results present little evidence to support MST as a worthwhile undertaking in Ontario.

Giles (2003) conducted a quasi-experimental comparing MST and Day Treatment applied to 60 adolescent males and females, aged 12 to 17, with diagnosis of Conduct Disorder. The Child and Adolescent Functional Assessment (CAFAS) was the outcome measure. The CAFAS (Hodges & Wong, 1996) gauges functioning in school and work, home, community, behavior towards others, moods and emotions, self-harm behavior, substance abuse, and thinking.

Day Treatment (DT), in this study, was based on a cognitive-behavioral model with intense examination of behavioral patterns and associated thoughts and consequences. This method was administered for a period of 9 to 12 months and was applied three hours a day for five days a week. A crisis number for weekend support was also available. Assessment of outcome was determined at three months post-referral, as that was the termination time for MST. The results of this study failed to support any positive effect for either therapeutic approach. Furthermore, there were no discriminatory outcome effects of gender reported on any of the CAFAS domain scores.

In a causative-comparative study of archival data by Smith-Toles (2003), pretest-posttest differences in outcome for MST, modified for a

residential setting, were examined. The comparison group received traditional methods of cognitive therapy, cognitive behavior therapy, and reality therapy. The sample consisted of 155 pre-adolescent and adolescent participants who exhibited various delinquent behaviors. Most of these behaviors were overt in nature: fighting, cruelty, explosive temper, arguing. At three months post-referral the MST group showed reduced delinquency scores upon discharge. Furthermore, family cohesion was rated higher by parents of participants of the MST condition.

The Norway study by Ogden and Halliday-Boykins (2004) is one of the first to study MST outside of North America with a non-English speaking sample. The purpose was to replicate the findings reported by the original developers of MST of producing more out of home placements and long-term favorable outcomes for seriously anti-social youths than Regular Services (RS) treatments of foster care, institutionalized placement, individualized counseling, parent training.

Recidivism rates were not used in this study because, in Norway, the judicial system often directs youth to Child Welfare Services, and follows policies for adolescent crime, which employ different contingencies than in the U.S.

The sample included 12 to 18 year old males and females who exhibited severe aggression, violence, female promiscuity, and rule breaking. Youth with primary issues that were unrelated to the focus of the study or posed a danger to therapists: substance abuse problems, suicidal ideology, autism, sex offenses, and dangerous homes – were excluded from the study. Long-term results (i.e. six months post intake) were obtained through instrumental assessment of various constructs relating to family and youth well being, as well as analysis of out of home placements. The results favoured MST in that post-treatment improvements were evident in internalizing behavior, externalizing behavior, social competence, family cohesion, family adaptability, time at home, and treatment satisfaction.

In a two-year post-intake follow up of this study Ogden and Hagen (2006) found that MST continued to be more effective than RS in reducing out of home placement and behavior problems. MST was found to be particularly effective with keeping males and older youths at home, compared to females and younger youths.

In a recently published meta-analysis of seven primary and four secondary MST outcome studies, some very promising claims are reported (Curtis, Ronan & Borduin, 2004). This study set out to determine the overall impact of American-based MST programming on youths with histories of *"social rule violations, acts against others, or both"* (p. 412). Selection criteria included the following: (a) MST programs and adherence measures; (b) random assignment and at least one comparison group; (c) samples included youth with antisocial behavior and/or psychiatric symptoms; (d) pre/post outcome measures and/or follow up measures; (e) use of statistics that allowed meta-analysis.

The results showed that MST youth and their families were functioning better than 70% of participants treated by usual or traditional methods. The effect sizes were greatest in MST efficacy studies using graduate student therapists rather than community-based therapists. Finally, MST was found to be more beneficial to family functioning than to individual adjustment and peer relations. However, the reported effect sizes were lower than in other efficacy studies. This suggests that more work may need to be done to improve the robustness of the MST effect.

Timmons-Mitchell, Bender, Kishna, and Mitchell (2006) conducted the first randomized clinical trial of MST with juvenile offenders in the United States without the direct oversight of the developers of MST. In this study, MST was compared to Treatment as Usual (TAS), which included drug and alcohol counseling, anger management group assignment, and individual and family therapy. The sample consisted of 93 youth who appeared before the county court of a Midwestern state. Those with a felony conviction or a suspended commitment to the Department of Youth Services incarcerating facility whose parents agreed to partake were included in the study. The participants were 15.1

years on average, 22% female, 15% African American, 77% European American and 4.2% were American Hispanic.

Forty-eight were randomly assigned to the MST treatment group. Dependent measures included assessment of recidivism and youth functioning. Youth functioning was assessed using the CAFAS (Hodges & Wong, 1996). Recidivism was assessed just prior to treatment, at termination and at 18 months post-treatment for the MST group. For the TAS group recidivism was measured prior to treatment, at six months post-treatment and 24 months post-treatment. The CAFAS was administered prior to treatment, at discharge and at six months post-treatment for the MST group. For the TAS group it was administered prior to treatment, at six months post-treatment and 12 months post-treatment. Quality assurance procedures were utilized as recommended by MST developers. This study demonstrated a significant reduction in re-arrest, and improvement in four areas of youth functioning on the CAFAS (i.e. home, school, community, and moods & emotions). The effect sizes, however, were lower than those reported in earlier efficacy studies. This is consistent with the lower effect sizes found in the meta-analysis of Curtis et al., 2004.

## **Discussion**

### *Specificity of Treatment Group*

Of the twelve studies that were reviewed, those focusing on a specific diagnosis were quite limited. Thus, although Giles (2003) drew a pool of youth diagnosed with CD, it is important to note that CD takes many forms and therefore, a general diagnosis of CD rates low on specificity. The fact that the diagnosis was determined through performance on the CAFAS, which includes eight domains including overt and covert manifestations of CD, underlines the non-specificity of the CD diagnosis.

The rest of the studies accepted referrals based on chronic offender status, risk of re-offending, and general troubles associated with youth (Borduin et al., 1995; Cunningham, 2001; Giles, 2003; Henggeler et al., 1996; Huey, 2000; Oakley, 2001; Ogden & Halliday-Boykins, 2004; Ogden

& Hagen, 2006; Schaffer, 2001; Smith-Toles, 2003; Timmons-Mitchell et al., 2006). None of these studies can effectively demonstrate MST outcomes for participants with highly specified social or psychological problems.

This also holds true for participant race, SES, and gender, which were very heterogeneous across the studies. Sample demographics are described in most studies and it is clear that conclusions regarding MST efficacy as a function of human demographics are very weak (Ogden & Hagen, 2006). Future research must address this concern by accounting for specific diagnostic categories such as overt conduct disorders, as well as demographic variables.

#### *Specificity of Comparison Groups*

Providing a well-defined comparison group in studies is generally considered good practice (Cunningham, 2001). This enhances the ability to predict the efficacy of a treatment on future treatment groups. In MST research the comparison group generally refers to a broad range of usual services available to treat and deal with juvenile delinquents. Therefore, a thorough description of usual services is necessary so that one can determine what types of interventions are being compared.

All of the studies included in this review described the roles of those administering the method (e.g. therapist, probation officer) and the length of time involved. A number of the studies went as far as to describe the programming/procedures involved including Individual Therapy (Borduin et al., 1995; Schaffer, 2001; Timmons-Mitchell et al., 2006), cognitive behavioral techniques in intense school based day treatment (Giles, 2003), cognitive-behavior and reality therapy (Smith-Toles, 2003), and foster care, institutionalization, and other Child Welfare services (Ogden et al., 2004; Ogden & Hagen, 2006; Timmons-Mitchell et al., 2006). Several of the studies, however, fell short of adequately outlining the specific programming and/or procedures involved (Cunningham, 2001; Henggeler et al., 1996; Huey, 2000). For example, Curtis et. al.'s (2004) meta-analysis required only that at least one comparison group was included in each study.

In these examples, the descriptions were too vague with reference to specialized programming and there is no description of what *usual services* or *social services* entail. This problem does not appear to be improving with time, as the descriptions have remained fragmentary since the early phases of this research. To simply use a descriptor such as *usual services* or *traditional methods* is obviously insufficient. Accordingly, studies must go an extra step and label the specific treatments (e.g. day treatment, institutionalization).

The problem is that social services, in general, are markedly discrepant from state to state and province to province. Therefore, one must not assume that the reported effects would be found in other areas, or, that implementing a MST program would even be a worthwhile endeavor. In view of the vigorous effort to maintain MST principles during treatment, it is highly probable that outcome variation is due to comparison group differences such as highly inadequate versus highly adequate probationary systems.

Conversely, a failure to find effect differences between treatment groups may be due to the inclusion of a comparison treatment that closely resembles MST. In many ways, MST is nothing more than a systematized format for ensuring that responsible, therapeutic practice based on empirically substantiated research targets multiple facets of an adolescent's life. Many typical services likely have therapists who adhere to very similar professional standards. For these reasons MST efficacy research has to make a better effort to define comparison treatments so that prospective implementers of the technique will be able to gauge its viability and generalizability more effectively.

#### *Treatment Locations*

In order to gauge the level of confidence that can be placed in MST effect generalizability, administration of the treatments in more than one geographical location was deemed to be an important feature of each study's design. Of the 12 studies reviewed (not including the meta-analysis), five drew upon a pool of participants from only one location

(Borduin, 1995; Giles, 2003; Oakley, 2001; Schaffer, 2001; Timmons-Mitchell, 2006). Two studies used two sites (Henggeler et al., 1996), while another used three (Smith-Toles, 2003). Huey et al.'s (2000) study drew upon several pools, but only one was considered pertinent to the current review (i.e. adolescents exhibiting CP). The Canadian (Cunningham, 2001) and Norwegian (Ogden et al., 2004; Ogden & Hagen, 2006) studies measured MST efficacy in four regions. Applying treatment in multiple locations decreases the chance of attaining data from an atypical sample of adolescent delinquents. As such, generalizability of effect is less questionable compared to single location studies. Current research trends appear to demonstrate a realization of this problem, although the recent Timmons-Mitchell (2006) study represents an exception. In this regard, MST research is enhancing the credibility of its findings and this should continue in future studies.

#### *Outcome Measures*

The studies in this review set out to analyze MST outcomes through measures of family functioning, adolescent behavior, and recidivism. Incorporating multiple measures of outcome is considered important in this review to ensure that the research was driven by a variety of research questions. Of the researchers involved, there would be less chance of directional bias resulting from the interests of one stakeholder or one specific purpose. Most of the studies examined incorporate multiple measures of outcome representing all three domains listed above (Borduin et al., 1995; Cunningham, 2001; Henggeler, 1996; Huey, 2000; Schaffer, 2001; Timmons-Mitchell, 2006). Three of the studies (Ogden et al., 2004; Ogden & Hagen, 2006; Smith-Toles, 2003) utilize multiple measures of adolescent behavior and family functioning, but do not report on recidivism rates. In Norway (Ogden et al., 2004; Ogden & Hagen, 2006), recidivism rates do not apply to the adolescent demographic, while the Smith-Toles (2003) study was directed toward studying MST effectiveness in residential treatment programs where recidivism was not a factor. The purpose of Oakley's (2001) study was to augment the results of the grander Ontario study (Cunningham, 2001) with measures of school-related outcomes pertaining to family and adolescent behavior. Although the measures were limited, they



augmented the results of the larger study quite well. Only one study used a single measure of outcome, the CAFAS (Giles, 2003). Although the CAFAS includes several domains (i.e. home, school, community, behavior toward self and others, moods/emotions, self-harm, thinking, & substance abuse) and good psychometric properties (e.g. test-retest & inter-rater reliability .6 to .7 and good concurrent & predictive validity) (Hodges & Wong, 1997), it is only one instrument and may or may not sufficiently describe MST efficacy.

In this review, the vast majority of studies drew upon multiple indicators of outcome pertaining to youth behavior, family functioning, and, where applicable, recidivism and conviction. As such, one can form well-grounded conclusions regarding the breadth and depth of the therapeutic effect (i.e. an effect does occur). The Norwegian studies (Ogden et al., 2004; Ogden & Hagen, 2006) included multiple measures of outcome, but many of the instruments were not standardized for the Norwegian population. As MST research extends into various countries, this problem will have to be overcome through re-standardization of the outcome measures. Although comparison to the control group can still be conducted, one cannot be certain that the target constructs are being measured. Future research conducted in non-English speaking countries should consider addressing this problem prior to investing thousands of dollars toward conducting MST trials.

#### *Follow-up Period*

Having sufficient follow-up data is essential to testing the staying power of any treatment. Furthermore, system differences can contribute to very different findings over time. For example, Cunningham (2001) reported major discrepancies between conviction rates at six months (71% not convicted) compared to those at 36 months (79% convicted). This was credited, in part, to length of time to try alleged criminals in the Canadian judicial system. Cunningham (2001) strongly suggests that long-term efficacy measures be taken at a minimum of one-year post treatment. Of the studies reviewed, the majority included reports of long-term effects of at least one year. This is likely sufficient, as the other studies focus on recidivism rather than conviction. Borduin et al. (1995)

reported effects of MST at four years post-treatment and again at 10 years (Schaffer, 2001). Cunningham's (2001) study reports interim results at four years with the intention of presenting further follow-up this year. Henggeler (1996), augmented by Huey (2000), presented a 1.7-year follow-up of MST effects. Three studies fall short of meeting the one-year follow-up expectation proposed by Cunningham (2001) (Giles, 2003; Oakley, 2001; Smith-Toles, 2003). Curtis, et. al.'s (2004) meta-analysis includes studies with follow-up data, but no specific follow-up criteria. Research in this area should continue investigating the long-term impact of MST so better assessments of its therapeutic effect, cost saving potential, and social impact can be formulated.

#### *Affiliation of Researcher with MST Model Developers*

Since the original developers, their close colleagues and students, generated the preponderance of literature related to MST determining the researchers affiliation is important. Narrowing this review to focus on outcomes for adolescents with CP helped diversify the authorship base because so many studies conducted by MST developers are dedicated to examining the effect of MST on substance abusers (Randall & Cunningham, 2003), on youths with suicidal ideology and other psychiatric emergencies (Huey, Henggeler, Rowland, & Halliday-Boykins, 2004) and on participants with sexual behavior problems (Letourneau, Schoenwald, & Sheidow, 2004).

In the current review, five of the twelve studies have authors with direct links to the original development of MST (Borduin et al., 1995; Curtis et. al., 2004; Henggeler et. al., 1996; Huey et. al., 2000; & Schaffer, 2001). With the exception of the meta-analysis, this accounts for almost 35% of the total participant population. Collegial connections to the developers are also apparent in the Canadian and Norwegian studies. This is likely difficult to avoid, as training must be provided and MST developers must grant licensure before programs are considered legitimate. Only one American based study (Timmons-Mitchell et al., 2006) claims to have no ties to the MST model developers. While this trend is reflective of responsible practice on the part of MST developers, it would be better to have independent researchers studying efficacy. In recent years, MST

research has been spreading throughout North America and overseas. To date, the results of these studies are quite discrepant and unconvincing. While the Norwegian studies show promise for MST (Ogden et al., 2004; Ogden & Hagen, 2006), the Canadian study's interim conclusion was to not endorse the use of MST in Canada (Cunningham, 2001). More international researchers, particularly those with no direct ties to the MST developers, should take on the challenge of measuring this program's effectiveness.

#### *Program Adherence*

There is growing advocacy for the inclusion of procedures that maximize MST program fidelity (Henggeler et al., 1997; Schoenwald, Sheidow, & Letourneau, 2003). And recent studies generally include the use of strict supervision, ongoing training, and measures of adherence to monitor for fidelity. Of the studies examined, four had no mechanism in place to ensure program adherence (Borduin et al., 1995; Giles, 2003; Schaffer, 2001; Smith-Toles, 2003). With the exception of the meta-analysis (Curtis et al., 2004), these studies accounted for almost 40% of the total. None of these projects, save Borduin et al.'s (1995), had control over including such measures in their design because they used archival data. Borduin et al.'s study was conducted early in the course of MST research and therefore did not include such measures. Although the Henggeler et al.'s (1996) and Huey et al. (2000) study incorporated an MST adherence measure, these did not include weekly monitoring. The Norwegian and Canadian studies included vigorous indicators of fidelity consisting of regular training, weekly monitoring, and adherence measures. Curtis et al.'s (2004) meta-analysis required measures of program adherence as part of the study selection criteria.

Clearly, program fidelity is taken very seriously in MST research (Schoenwald, Sheidow, & Letourneau, 2003), but recent study reports low adherence. After all of the precautions and focused efforts to keep its therapists on track, there are still those who veer from the plan. This may account in part for the less robust outcomes.

Researchers may be overlooking an important consideration regarding fidelity. It is possible that therapists who do not adhere closely to the principles of MST are finding that their participants are not responding favorably to the treatment, and a new course of action is implemented. If that is the case, therapists scoring lowest in fidelity may be those treating the most resistant of CPs. This may account for the unfavorable MST outcomes within this group.

Future studies should take a hard look at participants whose therapists get sidetracked from the typical MST approach to examine possible characteristic behavioral patterns or clusters, which could contribute to their being sidetracked. In other words, rather than blaming therapists for MST shortcomings, refine the treatment by analyzing youth and therapist characteristics in order to better understand where MST does and does not apply.

Another problem associated with enforced fidelity relates to stagnation of the therapy. MST research has been driven by one goal: to validate its effectiveness. There appears to be very little effort invested in making changes to the overall procedures. In other words, rather than focusing on development of the treatment, the focus is on keeping it the same. Future research should strive toward making subtle therapeutic changes based on the identification of effect weaknesses.

#### *Limitations of the Current Review*

The current review of MST research presents its own set of limitations. For one, the studies available relating specifically to CP in peer reviewed journals are rare. As a result the pool had to be extended to include Ph.D. dissertations and a federally funded government study. Although these studies were highly pertinent to the topic at hand, a better scenario would be to include studies that undergo a common method of scrutiny.

Another problem with this review relates to determining MST effects on a specific behavioral demographic. As noted, CP encompasses a variety of behavioral possibilities. Although there were clear exclusionary criteria in each of the studies outlined, the participants to be studied

remained diverse in many ways. Inclusion criteria were often based on broad behavioral problems associated with violence and criminal behavior. As such, the target group definition, *CP*, remains less succinct than the reviewers would like. As MST research becomes more plentiful and more specialized, these limitations will likely pose less of a challenge to future reviewers.

### Conclusion

This review set out to analyze MST effectiveness in addressing CP among adolescents. It would appear that MST could be a very powerful alternative to usual legal and social services (e.g. justice system, day treatment programs). The research is adequate in terms of inclusion of various treatment locations. This helps ensure that observed effects are not gained from an atypical sample, thus enhancing confidence in treatment generalization. Furthermore, the studies do well in including various dependent measures of treatment effect. As such, there is less chance of directional bias on the part of stakeholders in the development of MST. For the most part, follow-up periods have been long enough to assure long-term duration of the MST effect.

Despite these strengths, MST and research on it must improve in several ways. For one, the circumstances, which contribute to more and less robust MST effects, are not clear. This appears to be due to a lack of specificity in regard to description of treatment groups and comparison groups, as research is weak in this area. As such, it is very difficult to know where MST should and should not be applied.

Furthermore, individuals who have direct links to MST model development have conducted the preponderance of research. To date, the results of more independent researchers do not sufficiently replicate the earlier results. Before MST is claimed to be a viable alternative to usual services, more independent researchers must conduct efficacy studies.

Finally, MST program adherence by clinicians has been positively associated with treatment effect. Unfortunately, researchers have failed

to recognize that behavioral resistance to MST may account for infidelity on the part of researchers. As such, rigorous checks and balances have been incorporated into the MST model, which maximize adherence, possibly forcing therapists to apply strategies that are simply ineffective. Efforts to enhance the authenticity and consistency of the treatment may actually serve to stunt the evolution of MST. Despite these concerns, MST continues to expand nationally and internationally with insufficient empirical substantiation on the world stage. This review calls for further empirical scrutiny of MST efficacy in line with the outlined points.

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