The Impact of Parental Attributions and Characteristics on Treatment Outcome in Multisystemic Therapy for Delinquent Youth

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This dissertation titled
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Abstract

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The goal of the current study was to examine parental attributions about their child’s behavior, beliefs, and attitudes in the context of participation in Multisystemic treatment (MST) for delinquent youth. MST focuses on the youth and their family, and requires intense participation by the parents, as well as the youth (e.g. Henggeler et al., 1986). Due to parents’ integral involvement in treatment, the impact of their attributions, self-efficacy and motivation may have implications for treatment success. Research applying attributional theory to treatment of behavioral problems is limited, and the present study sought to provide information to fill this gap in clinical research. The attribution dimensions of locus of causality, controllability, stability, and globality were measured to determine the extent to which initial attributions were associated with initial feelings of parental self-efficacy, and parents’ motivation for participation in treatment. The study also examined the role of attributions, self-efficacy, and treatment motivation as predictors of treatment outcome, as measured by a decrease in the severity of problematic behaviors. In addition to the predictive model, changes in parental self-efficacy over the course of treatment were analyzed, to assess the effectiveness of MST interventions at increasing parents’ sense of efficacy and control of the child’s behavior. The study included 142 parents of children with delinquency problems, who were
recruited to participate at intake into one of five participating MST program. Parents completed measures at intake and discharge from treatment. Correlational analyses revealed that associations existed between the attribution domains, as well as associations between attributions, parents perceived of control of the child, and treatment motivation. Paired samples t-tests were conducted to determine changes in problem severity, as well as parental efficacy through treatment. Results found that the youth achieved significant reduction in problem severity, as rated by their parents. In addition, the parent’s sense of control of the child increased through treatment. Hierarchical regression analyses were conducted to test the study variables as predictors of treatment outcome. It was found that none of the hypothesized variables contributed to a predictive model, once initial problem severity and length of treatment were accounted for in the model. Results from this study contribute to the existing research in the domains of parental self-efficacy, treatment motivation and attributions, by examining associations between these variables in a clinical population. Important clinical information provided by this study was that MST was effective for the treatment of severe behavior problems among youth, regardless of parental perceptions.

Approved:_______________________________________________________________

Benjamin Ogles

Professor of Psychology
Dedication

To my father and mother, Steve and Kathie, in gratitude for their unending love and support through all of my endeavors
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The Impact of Attributions and Parental Characteristics on Treatment Outcome of Multisystemic Therapy for Delinquent Youth

Conduct problems and externalizing disorders constitute the majority of youth referrals to the mental health system, and have costly ramifications if left untreated. Conduct disorder (CD) and Oppositional Defiant Disorder (ODD) are currently two of the most frequently diagnosed disorders among youth who seek mental health services and have estimated lifetime prevalence rates of 9.5% and 10.2% respectively (e.g. Kessler et al., 2005; Nock, Kazdin, Hiripi, & Kessler, 2006; Nock, Kazdin, Hiripi, & Kessler, 2007). Broadly, behaviors included in the diagnosis of CD include, aggression to people or animals, destruction of property, deceitfulness or theft, and serious violation of rules (DSM-IV-TR, APA, 2000). Slightly different from CD, ODD is classified by recurrent oppositional and defiant behaviors. The negative consequences for these oppositional and/or antisocial behaviors are often extensive and include personal problems, family disruption, as well as considerable costs to the community and victims (e.g. Finch, Nelson, & Hart, 2006; Welsh et al., 2008). Additionally, it has been found in numerous studies that a clear trajectory exists between youth delinquency, especially youth that display delinquent behavior in childhood, and continuation of antisocial behavior into adulthood (e.g. see Farrington, 2004 for review; Frick & Dantagnan, 2005). Given the clear present, and future, dysfunction and impairment that youth with conduct problems face, the need for intensive treatment, and a better understanding of factors impacting treatment, is necessary.
Treatment of conduct problems is especially difficult, because often the affected youth does not refer himself or herself to treatment and may be resistant to participation in treatment and behavior change (Feldstein & Ginsburg, 2006; Finch et al., 2006). In recent decades it has become increasingly clear that for successful treatment of conduct problems among children and adolescents a family-based approach, focusing on multiple aspects of the child’s life, is most effective (Hinton, Sheperis & Sims, 2003; Kazdin, 2002; Miller & Prinz, 2003; Nock & Ferriter, 2005; Sexton, Alexander & Mease, 2004). Indeed, family-based ecological therapies have been acknowledged by the U.S. Surgeon General as model approaches for the treatment of CD (as cited in Henggeler & Sheidow, 2003). It is this perspective that drives the theory and practice of Multisystemic Therapy (MST) as a treatment for serious juvenile delinquents (e.g. Henggeler et al., 1986; Henggeler, Schoenwald, Borduin, Rowland & Cunningham, 1998). MST has garnered a large base of empirical support, yet lacks examination of individual factors and perceptions (particularly among participating parents) and their effect on the level of treatment success. In this regard, the purpose of the current study is to examine parental attributions, beliefs, and attitudes in the context of MST participation and treatment outcome.

**Multisystemic Therapy**

The development of Multisystemic Therapy (MST) grew out of a need to treat serious juvenile offenders, a population often referred to as “difficult to treat”, and is often an alternative to juvenile detention centers or residential treatment (Henggeler & Borduin, 1990; Henggeler et al., 1986). Since its creation, MST has been shown in numerous studies to be an effective treatment for severe conduct problems among
children and adolescents (e.g. Henggeler, Melton, Brondino, Scherer & Hanley, 1997; Henggeler, Melton & Smith, 1992; Henggeler, Melton, Smith, Schoenwald, & Hanley, 1993; Henggeler, Sheidow, & Lee, 2007; Timmons-Mitchell, Bender, Krishna, & Mitchell, 2006). Along with reducing current conduct problems, MST has also found success at decreasing rates of recidivism, in some cases over 13 years post-treatment (e.g. Borduin et al., 1995; Curtis, Ronan, & Borduin, 2004; Henggeler, Sheidow, & Lee, 2009; Henggeler et al., 1997; Henggeler et al., 2007; Schaeffer & Borduin, 2005). The majority of research has focused on juvenile offenders, though studies have shown improvements among other populations such as substance abusers, sexual offenders and youths with psychiatric emergencies (e.g. Borduin & Schaeffer, 2001; Henggeler, 1999; Henggeler et al., 2007).

MST is a time-limited, intensive, and comprehensive treatment that targets all areas of an adolescent’s life that are viewed as pertinent to behavior change, such as family dysfunction, parental disturbance, deviant peer groups, and poor academic performance (Borduin, 1999). The philosophy of MST is that the most effective route to helping youth is through helping their families as well, and the family is seen as a valuable resource despite problems that may exist (e.g. Henggeler et al., 1986; Henggeler et al., 1998; Henggeler, 1999). MST therapists focus on empowering the parents in order to maintain change, and interventions are often aimed at teaching parents effective parenting techniques (i.e. increased parental supervision, appropriate discipline, and consistent consequences) and providing them with the resources to help raise their child (e.g. Borduin, 1999; Henggeler et al., 1998).
Despite the strong emphasis placed on the parents’ roles in treatment success, limited research has been conducted on parents’ attitudes toward their child or treatment in general. Most of the studies conducted on MST have examined rates of recidivism, antisocial behavior, service use (i.e. mental health, juvenile justice, social welfare), school functioning, and out-of-home placements (e.g. Borduin, Schaeffer, & Ronis, 2003; Randall & Cunningham, 2003). However, little research has specifically examined parent variables as possible contributors to treatment success. Given the importance and emphasis on empowering parents, and viewing parents as key agents of change, the lack of attention to parent variables is surprising.

*Parental factors in adolescent treatment*

Overall, knowledge of the role of parental cognitions in interventions for children has been noted as an important aspect to the study of treatment outcome (Johnston, 1996; Morrissey-Kane & Prinz, 1999). There exist several important parental factors that could potentially help or hinder treatment of youth. The current study focuses on three factors related to parents’ perceptions and beliefs; namely, parent motivation, parental self-efficacy, and parental attributions. These perceptual variables were chosen because there is a possibility that these variables may be more malleable, as compared to more stable factors such as socioeconomic status, family household composition, or living situation. If these factors do influence treatment outcome, therapeutic strategies could then be targeted toward changing parental perceptions and cognitions to help enhance treatment.

*Parental Motivation.* Given the oftentimes demanding nature of treatment of conduct problems, the parents’ level of motivation for change is critical to treatment success (Nock & Kazdin, 2005; Nock & Photos, 2006). Motivation, in the context of
psychological treatment, is defined as the desire and willingness to participate in
treatment with the goal of obtaining positive change (Drieschner, Lammers, & van der
Staak, 2004; Nock & Photos, 2006). The importance of treatment motivation has been
consistently found among adult populations (e.g. Drieschner et al., 2004; Miller &
Rollnick, 2002), but studies are lacking regarding its influence in child and family
treatments (Nock & Ferriter, 2005; Nock & Photos, 2006). It has been suggested that
parents’ level of motivation for treatment is one of the most important predictors of
treatment attendance and adherence (Nock & Photos, 2006). As an example, in a study
aimed at increasing parent motivation and treatment adherence, Nock and Kazdin (2005)
found that increased parent motivation was associated with higher treatment attendance
and quality of treatment adherence. Their study involved the implementation of a brief
motivational enhancement intervention as an addition to parent management training for
treatment of child conduct problems. Parents who received the intervention did, in fact,
have increased treatment motivation, as well as changes in adherence and attendance.
Interpretation of the results of this study suggests that parent motivation is a mechanism
of change in child therapy, although more studies need to be conducted to strengthen this
proposition.

To examine motivation further, Nock and Photos (2006) designed a measure, the
Parent Motivation Inventory (PMI), to measure the level of parents’ motivation and its
predictive validity for perceived barriers and treatment attendance. In their study, parents
completed the PMI, and a measure of perceived barriers to participation, during the first
and fifth session of parent management training for the treatment of child disruptive
behavior problems. It was found that scores on the PMI, both initially and after 5
sessions, were related to perceived barriers and treatment attendance. Specifically, it was found that a mediator relationship existed, in which increased parental motivation led to perception of fewer barriers to treatment, which then led to improved treatment attendance and related positive outcomes.

Parental Self-Efficacy. Parental self-efficacy is closely linked with parenting practices and confidence in implementing parenting techniques (e.g. Jones & Prinz, 2005). Bandura (1982) defined self-efficacy as expectations that an individual has for successful coping in future situations and the expectations about the ability to successfully accomplish certain tasks. Related to parenting, parental self-efficacy can be defined as the parent’s expectations that he or she can competently control their child’s behavior and parent their child successfully (Jones & Prinz, 2005; Lovejoy, Verda, & Hays, 1997). Jones and Prinz (2005) reviewed the extant literature on parental self-efficacy and found that it directly and indirectly influences child adjustment, child behaviors, maltreatment, and parental well-being.

There is evidence that parental self-efficacy is strongly associated with parental competence and that it is tied to effective parenting practices (e.g. Jones & Prinz, 2005). As an illustration, it has been found that parents who have high self-efficacy are more likely to utilize positive, effective parenting skills and are more likely to try new parenting practices (Ardelt & Eccles, 2001; Jones & Prinz, 2005). Related to older children, it has been found among parents of adolescents, that high levels of perceived competence are related to high levels of parental monitoring of the child and involvement (Bogenschneider, Small, & Tsay, 1997), two parenting practices associated with reduced delinquency (e.g. Farrington, 2005). As opposed to high parental self-efficacy, parents
with low parental self-efficacy tend to use less effective strategies, and will often “give up” when faced with challenging behavior, or convert to harsh, ineffective strategies to control child behavior (Sanders & Woolley, 2005). These parents tend to be resistant to trying new, more effective, parenting techniques, presumably due to a lack of confidence in their ability to implement the strategies. If a parent is lacking the confidence to try new parenting techniques, this can greatly hinder treatments that require changes in parenting practices to achieve behavior change in the child. Finally, it has also been found that mothers of children with conduct problems are more likely to have lower parental self-efficacy, as compared to mothers of non-problem children (Sanders & Woolley, 2005).

It must be noted that parental self-efficacy is a difficult conceptual construct, and it can be viewed as “an antecedent, a consequence, a mediator, and a transactional variable” (Jones & Prinz, 2005, p. 342). Thus, a feedback loop may occur in which parents with high parental self-efficacy implement effective parenting strategies, thereby increasing positive child outcomes, which further strengthen the parents’ self-efficacy. Although the studies cited here do demonstrate links between parental self-efficacy and various parenting aspects, a critical stance is necessary in the interpretation of self-efficacy findings. That said, the importance of parental self-efficacy cannot be denied and needs further examination among studies of treatments that include parents as agents of change, such as MST.

*Parental Attributions.* An important, yet often overlooked, aspect of child and adolescent treatment is the attributional processes that occur among family members. Because parents’ involvement in child treatment is so critical to treatment success, knowledge of a parent’s attributions about the child’s behavior may help predict or
explain the parent’s feelings and behaviors toward the child, and help guide treatment (Alexander, Waldron, Barton, & Mas, 1989; Miller & Prinz, 2003; Nock & Photos, 2006). The way in which a parent perceives his or her child may impact his or her receptivity to various treatment modalities, and general treatment acceptability (Johnston & Ohan, 2005). Understanding the attribution patterns among parents of children with behavior problems may help in the initial stages of therapy, by finding ways to explain to the parents the rationale for treatment in a way that fits their current perceptions of their child.

Generally, attributions are defined as the way in which individuals evaluate and explain behavior (Miller, 1995). Attributional theory examines the perception process by accounting for the consequences of attributions, such as feelings, behaviors, and expectancies, in addition to the assessment of perceived causes of behavior (Kelley & Michela, 1980; Weiner, 1983). Bernard Weiner created a taxonomy of attributions that focused on three causal dimensions (e.g. Weiner 1974, 1979, 1980, 1983). The three original dimensions of causality are: locus of causality, stability, and controllability. The first dimension, *locus of causality*, refers to whether a behavior is viewed as internal to the individual (e.g. ability, disposition), or due to an external cause (e.g. environment, parents, peers). The dimension of *stability* refers to temporal nature of a cause, or whether the behavior is viewed to persist over time. Finally, the dimension of *controllability* pertains to the degree of control the perceiver believes the individual has over his or her behavior. An additional factor that was not included in Weiner’s original attributional model, but is often considered, is the dimension of *globality* (Weiner, 1985). Abramson, Seligman and Teasdale (1978) define the *globality* dimension as pertaining to
whether a cause is general, or specific to a situation. It is proposed that individuals perceive an action, and then classify the behavior on each of these dimensions, which then influences both affective and behavioral responses.

In clinical studies, it has been found that parents of children with disruptive behavior disorders (e.g. ADHD, CD, ODD), often have more negative attributions regarding their child’s behavior, as compared to parents of non-disordered children (e.g. Dix & Lochman, 1990; Freeman, Johnston, & Barth, 1997; Johnston & Freeman, 1997; Joiner & Wagner, 1996; Miller, 1995). It should be noted that the term “negative attributions” in research literature refers to a pattern of attributions that misbehavior is internal to the child, controllable, stable, and global (e.g. Alexander et al., 1989; Baden & Howe, 1992). As an example, Baden and Howe (1992) found that parents of children with CD viewed their child’s misbehavior as more stable, global, intentional, and beyond parent control, as compared to parents of children without CD. Conversely, parents of non-problem children tend to view negative behaviors as more uncontrollable, external, and unstable, and positive behaviors as more internal, controllable, and stable (Johnston & Ohan, 2005). An early study by Alexander and colleagues (1989), examined the attribution process among families of delinquent adolescents referred for family therapy. It was found that initial interactions that promoted a negative attributional set led to subsequent negative behaviors and further negative attributions. A review by Morrissey-Kane and Prinz (1999) discussed parental attributions and cognitions as they relate to all aspects of treatment, from initial help-seeking through completion. One reported study that did examine the link between parental attributions and treatment outcome found that treatment success was lowest when mothers attributed their child’s negative behavior to
causes internal to the child (e.g. his/her disposition) (Watson, 1986). Although
Morrissette-Kane and Prinz (1999) did not report many studies addressing the prediction of treatment outcome from attributions, likely due to the fact that there are few studies examining this link, they did emphasize the importance of including attributions in treatment research.

Community-based studies have been conducted and found that certain attribution dimensions, especially globality and stability, were related to parent-adolescent relationship conflict (Grace, Kelley, & McKain, 1993; Heatherington et al., 2007). Although these studies are informative, it must be noted that the samples were a community-based, and not a clinical population. Current research is needed using a clinical population to determine the role of attributions among families with adolescents with oppositional and delinquent behavior.

*Associations between Parental Perceptions.* In addition to identifying the patterns of attributions among parents, researchers have examined associations between attributions and parental characteristics. One relevant area of study pertains to the associations between attributions, parenting techniques and self-efficacy (Morrissette-Kane & Prinz, 1999). It has been found that negative attributions (i.e. views that misbehaviors are global, stable, and controllable) were related to harsher and more punitive discipline, and a lower sense of parental self-efficacy regarding their parenting behaviors (Geller & Johnston, 1995; Johnston & Ohan, 2005; Leung & Slep, 2006; MacKinnon, Lamb, Arbuckle, Baradaran, & Vrolling, 1992; Morrissette-Kane & Prinz, 1999). One important implication found by Leung and Slep (2006) was that there was an increase in conduct problems over time among the children whose parents held negative
attributions and used ineffective discipline. Their study provides evidence, not only for
the concurrent harmful association between negative attributions and discipline, but for
the negative cycle that can result if these factors persist over time. It has been suggested
that providing parenting techniques may not be sufficient for some parents, and that
including techniques to re-frame maladaptive parental attributions should be included in
treatment (Day, Factor, & Szkiba-Day, 1994). There is only a small amount of existing
research that examines the associations between parental self-efficacy and attributions,
although this information may provide clinically useful information.

Additionally, an association may exist between parents’ attributions and their
motivation toward treatment participation. For example, if a parent views his or her
child’s behavior problems as stable, then hope for treatment success, and concomitant
motivation may be lacking (Morrissey-Kane & Prinz, 1999). Currently, given the existing
research, much is unknown about the effects of attributions on different phases of
treatment and overall outcome. Nevertheless, the inclusion of attributional theory as a
guide to understanding treatment of families with a delinquent youth appears promising
(Alexander et al., 1989; Heatherington, Tolejko, McDonald & Funk, 2007). Overall, the
need for studies examining pre-treatment attributions, parental self-efficacy, and
motivation, as related to treatment outcome is clearly evident, based on the status of
existing research.
The Present Study

The purpose of the current study was to examine the associations between parental attributions, self-efficacy, motivation for treatment, and treatment outcome in the context of MST. This study intended to fill gaps in current empirical knowledge by a) examining the associations between parental attributions, self-efficacy and motivation for treatment participation, and b) investigating parental perceptions that may influence treatment outcome of MST services. The current study was conceptualized in two related parts: the first part focused on correlations of the variables at the beginning of treatment, and the second part focused on prediction of treatment outcome.

The overarching goal of the first part of the study was to examine the pattern of attributions that exist among parents of youth in MST services, as well as measure the associations between attributions, motivation for treatment, and parental self-efficacy. The first hypothesis was that a pattern of attributions would exist, with parents attributing the causes of their child’s misbehaviors to internal, controllable, stable, and global factors. Second, it was hypothesized that there would be an association between parental attributions and initial motivation for treatment. Specifically, attributions that misbehavior is internal, controllable, stable, and global would be associated with lower levels of motivation. The final hypothesis in the first part was that there would be an association between parental attributions and parental self-efficacy. Namely, lower parental self-efficacy would be associated with attributions that misbehavior is internal, controllable, stable, and global.

The second part of the study examined attributions, motivation, and self-efficacy as predictors of treatment outcome. Additionally, changes in parental self-efficacy and
control were measured from pre-treatment to post-treatment. Current research on attributions as predictors of treatment success is limited, therefore several of the hypotheses within this overall goal were exploratory. First, it was hypothesized that parental self-efficacy and parental perceptions of control would increase from pre-treatment to post-treatment, given the focus of MST techniques on increasing parenting skills and competence. The second hypothesis was that parents’ level of motivation would be a predictor of treatment outcome; specifically, that low levels of initial motivation would predict poorer treatment response. It was proposed that parental attributions would be a predictor of treatment outcome, but due to the lack of previous research, no specific direction was hypothesized. Similarly, an exploratory hypothesis was proposed to examine the impact of initial parental self-efficacy as a predictor of treatment outcome. This hypothesis was exploratory, due to the possible effects of increasing self-efficacy over the course of treatment that may better account for treatment outcome. Finally, the combination of parental attributions, self-efficacy, and motivation as predictors of treatment outcome was examined. It was expected that these variables would account for part of the variance in treatment outcome, but the contribution of each variable to the predictive model was unknown. Given the state of the current research knowledge, this hypothesis was purely exploratory.
Method

Participants

Study participants were 142 caregivers of youth receiving MST treatment from five participating MST programs in Ohio. At the initiation of services, all caregivers in the home were offered the opportunity to participate in the study. If two caregivers were present, the primary caregiver was determined as the individual who has the most exposure to the youth’s behavior (i.e. spends the most time with the youth) and most involved in treatment, as determined by the caregivers and MST therapist. Due to the nature of the study, only responses from primary caregivers were utilized in analyses, to reduce confounds associated with multiple informants rating one target child. Families entered MST through various routes, although the most common referral sources for the MST programs participating in this study were juvenile probation, Job and Family Services, Department of Children’s Services, as well as local county councils. See Appendix A for treatment details.

Among the 142 families involved in the project, 35 families (24.6%) had two caregivers. The majority of primary caregivers were the child’s biological mother (78.2%), followed by biological father (9.2%), grandmother (7.7%), aunt (3.5%), step-parent (0.7%), or other relationship (0.7%). Thus, the child’s caregiver will be referred to as a parent in subsequent discussion. For 42.6% of parents, the youth in services was their first child. The parent sample was comprised of 66% Caucasians, 19% African-Americans, 9% Bi-racial, 5% Hispanic, and 1% other ethnicity. The ethnic composition of the youth enrolled in services was comparable to parental ethnicity. The mean length of treatment ranged from 6 days to 11.9 months, and the average duration was 4.6 months.
(SD = 2.1 months), which is consistent with MST program guidelines. The socioeconomic status of the families was calculated using the Hollingshead Index (Hollingshead, 1975). Hollingshead scores ranged from 6 to 66, with higher scores indicating higher socioeconomic status. The current sample primarily consisted of low-income families (M = 26.78, SD = 13.92). Families were also categorized into Hollingshead social strata, with lower strata indicating lower SES: I (37%), II (23%), III (19%), IV (18%), and V (3%). See Table 1 for full demographic information.

The youth in the study ranged in age from 10 to 18 years old (M = 14.4 years; SD = 8.8). The majority of youth were male (64%), and is consistent with other studies of MST and externalizing disorders in general. The DSM-IV-TR (APA, 2000) psychological diagnoses reported were, Oppositional Defiant Disorder (58.7%), Conduct Disorder (14.1%), Attention-Deficit/Hyperactivity Disorder (10.7%), Substance Abuse Disorder (2.5%), Mood disorder (5.0%), or other diagnosis (e.g. Adjustment Disorder) (9.1%). Thirty-five percent of youth were diagnosed with two or more co-morbid disorders. Based on parent-reported behaviors from the Attribution Questionnaire, the youth display an average of 4.9 (SD = 2.3) ODD-related behaviors (e.g. breaks rules, defies adults) and 3.9 (SD = 2.3) CD-related behaviors (e.g. fights, steals, damages property). Based on the clinical cutoff on the Problem Severity Scores on the Ohio Scales (i.e. score greater than 20), 67% of youth were considered to be in the clinical range of problem severity. See Table 2 for full descriptive characteristics.

**Measures**

*Demographic Information Sheet.* The parents completed a brief demographic information form at the beginning of the measures completed at intake. The form
included information about relationship to the youth, age of informant, age of child, gender of child, race, highest level of education, and occupation.

**Attribution Questionnaire.** For the current study, an attribution measure was adapted using an existing framework and questions from two previous studies of parental attributions (Baden & Howe, 1992; Heatherington et al., 2007). Based on methodology by Baden and Howe (1992), attributions were measured by allowing the parent to select problem behaviors displayed by his or her child from a list of misbehaviors. Then, based on the identified behaviors, the parent’s attributions regarding his or her child were elicited on all domains of attributions. Rather than requiring parents to rate each behavior on all attribution domains, the behaviors were grouped into four clusters: aggression, property violations, status violations, and oppositional behaviors. The rationale for grouping the behaviors is based on Frick and colleagues’ (1993) classification of misbehavior on two dimensions (covert-overt and destructive-nondestructive). Parents were allowed to choose an unlimited number of behaviors from the lists provided; therefore, information regarding the nature and severity of the child’s antisocial behavior was also obtained. This methodology was similar to that of Baden and Howe (1992), but was more comprehensive and theoretically based.

The attribution questions for the current study were adapted from the study by Heatherington and colleagues (2007). In their study, they measured the attributions of locus of causality (“My child’s behavior was due to something about him or her”), stability (“The reason my child did this is not likely to change”) and globality (“The reason my child did this is something that affects other areas of our relationship”). The domains were rated on a 6-point scale with values ranging from 1 (“Strongly disagree”)
to 6 (“Strongly agree”). Heatherington et al. (2007) calculated reliability coefficients for these domains and found that all domains have adequate reliability; .67 (internality), .69 (stability); and .84 (globality). They did not measure the attribution of controllability. The internal consistency ratings on the attribution measure used by Baden and Howe (1992) ranged from .42 to .73. For the current measure, questions for the attribution domains were constructed using similar wording and format as the measure used by Heatherington and colleagues (2007). Although the combination of two measures had the possibility of introducing measurement error, it was viewed as the best approach, due to the lack of appropriate measures of attributions in the extant research literature. The reliability coefficients calculated in the present study were all found to be similar to, or greater than, those from previous studies. The coefficients are as follows, .82 (locus of causality), .93 (stability), .85 (globality), .85 (controllability), and .86 (overall attributions combined).

For each domain, the scores were averaged across the four behavior categories. To provide an overall measure of attributions, ratings on each of the domains were averaged to form an overall attribution variable. The combination of the attribution domains into a single score was conducted to provide a straightforward variable for the regression analyses, as well as a succinct method to encompass the broad “negative attribution” concept. For each domain, higher scores indicate more negative attributions (i.e. internal, controllable, stable, and global). Therefore, a higher score on the composite variable indicated more “negative” attributions for the child’s behavior. This combination of attribution scores from all domains has been conducted in previous
research as a method to succinctly analyze the overall attribution construct (Hoza et al.,

*Parent Motivation Inventory.* The Parent Motivation Inventory (PMI) is a
measure designed to assess parent motivation to participate in treatment for his or her
child (Nock & Photos, 2006). The PMI is a 25 item self-report measure on a five-point
scale with values ranging from 1 (“Strongly disagree”) to 5 (“Strongly agree”).
Responses to all items were averaged, with higher scores indicating higher levels of
motivation. This measure was designed to assess three components of motivation,
including: desire for child change, readiness to change parenting behavior, and perceived
ability to change parenting behavior (Nock & Photos, 2006). Given the nature of MST
services, the PMI was altered slightly in order to accurately fit the type of treatment
provided. A total of five questions were altered slightly, due to their mention of “clinic”,
“coming to therapy”, or specific description of time or frequency of sessions. The PMI
has demonstrated good internal consistency reliability (Cronbach’s $\alpha = .96$) and test-
retest reliability (from the administration of the measure at the first and fifth sessions)
(Nock & Photos, 2006). A principal components analysis was conducted by Nock and
Photos (2006), and a single component model of the PMI was supported. The reliability
coefficient obtained in the present study (Cronbach’s $\alpha = .89$) was slightly less than that
obtained by Nock and Photos (2006), although still strong.

*Parental Locus of Control Scale.* The Parental Locus of Control Scale (PLOC)
was designed to assess various aspects related to parents’ perceptions of control (Campis,
Lyman, & Prentice-Dunn, 1986). The PLOC is appropriate for use with parents of older
children, and has been found to be correlated with other measures of parental self-
efficacy (Lovejoy et al., 1997). The 47-item scale is scored on a five-point scale with values ranging from 1 (“Strongly disagree”) to 5 (“Strongly agree”), and items are summed to create each subscale score. The PLOC has five distinct subscales: Parental efficacy, Parental responsibility, Child control of parents’ life, Parental belief in fate/chance, and Parental control of child’s behavior. The current study utilized the Parental Efficacy and Parental Control of Child’s Behavior subscales only. The PLOC scale is most often interpreted based on the subscales, rather than an overall score, and the use of select subscales is appropriate.

Reliability coefficients were calculated in two studies, and the subscales show adequate reliability (Campis et al., 1986; Lovejoy et al., 1997). Specifically, the Parental Efficacy subscale coefficients were .75 and .62; and Parental Control subscale coefficients were .65 and .71. The reliability coefficients obtained in the present study were similar to, or higher than, those obtained in previous studies; the Parental Efficacy subscale coefficient was .69, and the Parental Control subscale coefficient was .84.

Ohio Scales. The Ohio Scales were routinely administered at the intake and completion of all participating MST programs. The Ohio Scales is a self-report measure that assesses four domains: severity of problem behavior, youth functioning, hopefulness for the future, and satisfaction with services (Ogles, Melendez, Davis, & Lunnen, 2000, 2001). There exist three versions of these scales, namely youth, parent, and agency worker (clinician) report forms. All three versions were collected, but only the parent version was used in the current study, due to the overall emphasis on measuring parents’ perceptions.
The Problem Severity and Youth Functioning subscales were analyzed in the current study. The Problem Severity scale includes 20 items related to typical problems of youth in mental health services. For each item, the severity or frequency of the behavior is rated on a six-point scale, ranging from 0 (“Not at all”) to 5 (“All the time”) and are summed to create a total score. Higher scores indicate greater severity and frequency of problematic behavior. A Problem Severity score higher than 20 indicate clinically significant problems. The Youth Functioning scale includes 20 questions that examine the functioning of the youth in several aspects of daily life, such as interpersonal relationships, motivation, and recreational activities. Each item is rated on a five-point scale ranging from 0 (“Extreme troubles”) to 4 (“Doing very well”). Scores are summed with higher scores indicating more positive functioning. The Ohio Scales have demonstrated good validity and internal consistency in past studies. It has been found that the Ohio Scales correlate highly with an established measure of child behavior, the Child Behavior Checklist (CBCL), ranging from $r = .63$ to $r = .66$ (Achenbach, 1991; Texas Department of Mental Health and Mental Retardation, 2004). Internal consistency estimates for the parent form have been found to range from .89 to .93 for the Problem Severity Scale and .93 for the Functioning Scale (Ogles et al., 2000). The reliability coefficients in the present study were .91 for the Problem Severity subscale and .94 for the Functioning subscale.

*Procedure*

All data was collected within the intake and discharge procedures already established at each MST site. At the time of intake, the MST therapist assigned to the family invited the parents or caregivers living with the youth to complete the proposed
measures and participate in the study. A total of 26 MST therapists, across the five sites, collected the data from their clients. At intake, the caregivers completed the Demographics sheet, Attribution Questionnaire (AQ), PLOC, PMI, and the Ohio Scales. At termination of treatment, the parent completed the AQ, PLOC, and the Ohio Scales. Based on MST program requirements in Ohio, the Ohio Scales are completed at intake and discharge from all clients. Therefore, if the parents did not complete the study measures at the end of treatment, collection and analysis of Ohio Scales data was still conducted.

Responses from the Demographic form regarding education and occupation were coded to formulate the Hollingshead Index for socioeconomic status (Hollingshead, 1975). The Hollingshead Index is calculated through a numeric formula that includes information on occupation, education, and marital status. Marital status was obtained from the Worker Ohio Scales and the MST therapists. The Hollingshead Index provides a measure of SES, in which higher numbers indicate higher SES. In addition, social strata (I-V) are calculated as a way in which to place individuals into SES classes. See Hollingshead (1975) for details of the calculation of the Hollingshead Index. The majority of the coding was conducted by two research assistants and the primary investigator. Discrepancies between the two research assistants’ ratings were resolved by the primary investigator.
Results

Of the 142 parents in the study, 120 participants had Time 1 measures and Time 2 Parent Ohio Scales (the main dependent variable), and 87 participants had complete Time 1 and Time 2 data. The discrepancy between the Time 1 and Time 2 sample size was due to a combination of treatment drop-out and inability or refusal to complete the Time 2 measures (See Appendix D for participant flow chart). Comparison of participants who had complete data versus those missing any part of Time 2 data was conducted on the key variables of initial problem severity, parent age, child age, child gender, SES, treatment site, and scores on all Time 1 measures. No significant differences were found on any of these variables. Therefore, all participants were included in the analyses and the sample size was noted for each analysis.

Prior to analysis, tests of normality and homogeneity of variance were conducted on all variables. Within the AQ, it was found that all of the attribution domains, with the exception of the Overall Attribution score, were significantly skewed. The domains of Locus of Causality, Controllability, and Globality were negatively skewed and the domain of Stability was positively skewed. The Parental Efficacy and Parental Control subscales on the PLOC were both normally distributed. In addition, these two subscales were found to be highly correlated ($r = .42, p < .001$), as would be expected (see Table 4 for means). The scores on the PMI were negatively skewed. This skewness on the PMI was not surprising, given the context of entry into MST treatment. That is, the parents were highly motivated to receive treatment. On the Ohio Scales, the Youth Functioning subscale was normally distributed, but the Problem Severity was slightly positively
skewed (see Table 3 for means of all measures). Given the nature of the measures, the level of skewness was expected, and therefore logarithmic transformations were not conducted.

Paired sample t-tests were conducted for the analysis of pre-treatment and post-treatment differences on the parent Ohio Scales Problem Severity and Youth Functioning subscales. It was found that there was a significant change between Time 1 and Time 2 on the Problem Severity subscale, \( t(115) = 7.16, p < .001 \), and Youth Functioning subscale, \( t(114) = -5.84, p < .001 \) (see Table 4 for means). Through the course of treatment, problem severity significantly decreased and youth functioning significantly increased. For additional information, correlational analyses were conducted between the Parent, Youth, and Worker Ohio Scales, to determine whether the addition of Worker or Youth scores would significantly add to the findings of the study. It was found that the three versions were highly correlated with correlation coefficients ranging from \( r = .46 \) to \( r = .73 (p < .001) \). Because the scales were so highly correlated, the use of only the parent version was supported.

The first overarching goal of the current study was to examine correlations between parental attributions, motivation, and parental self-efficacy. Correlation analyses were conducted to test the statistical significance of the relationships. It was found that Locus of Causality was the most highly correlated variable, and was significantly positively correlated with Stability \( (r = .21, p < .05) \), Globality \( (r = .43, p < .01) \), and Controllability \( (r = .28, p < .01) \). Therefore, if a parent reported that they viewed their child’s problems as internal (i.e. something about the child), then they also were likely to report that the problems were stable, global, and controllable by the child. Stability was
also significantly correlated with Globality ($r = .23, p < .01$). That is, if parents reported a higher level of stability of their child’s problems, they reported higher levels of these problems affecting multiple areas of the child’s life. All of the attribution domains were significantly correlated with the combined Overall attribution variable. The significant correlations between the individual domain scores and overall attribution score provide support for the use of the overall score as a succinct measure of attributions. (see Table 5 for complete correlation coefficients). Descriptively, examination of the mean scores from the AQ indicated that parents reported that their child’s problems were more likely due to something about the child himself or herself (internal), affecting multiple areas of the child’s life (global), and in the child’s control. The mean score for stability indicated that parents were slightly more likely to report that the problem behavior will subside in the future.

Correlational analyses were conducted to test the second hypothesis, specifically that associations would exist between parental attributions and motivation for treatment, as measured by the PMI. First, correlations were conducted between the AQ Overall Attribution score and PMI score. The Overall Attribution score was significantly correlated with the PMI ($r = .22, p = .01$). Because the Overall score was significantly correlated with the PMI, further analyses were conducted to examine the specific domains associated with motivation. It was found that the PMI was significantly correlated with Locus of Causality ($r = .30, p < .01$) and Globality ($r = .31, p < .01$). The hypothesis, that an association would exist between the two variables, was supported; however, the direction of correlations was in the opposite direction than predicted. Specifically, it was found that a more internal locus of causality (i.e. something about the
child) and greater globality (i.e. affects many areas of child’s life) were associated with higher levels of overall motivation (see Table 6 for complete correlation coefficients).

The final analyses within the first goal were to examine correlations between the attribution domains and parental self-efficacy and parental control, as measured by subscales from the PLOC. Specifically, it was hypothesized that attributions that misbehavior is controllable by the child, internal, stable, and global would be associated with lower parental self-efficacy and control. This hypothesis was partially supported. First, correlational analyses between the AQ Overall score and the PLOC Parental Control and Parental Efficacy subscales were conducted. There was a significant correlation between the AQ Overall score and the Parental Control domain \( (r = .38, p < .01) \). There was not a significant correlation between the AQ Overall score and Parental Efficacy \( (r = .12, \text{ ns}) \), therefore further analyses on the attribution domains were not conducted. Regarding the pattern of correlations between Parental Control and attributions, significant associations were found between Parental Control and the attribution domains of Locus of Causality \( (r = .19, p < .05) \), Stability \( (r = .38, p < .01) \), and Globality \( (r = .35, p < .01) \). From these results, it could be suggested that a parent’s beliefs about their child’s misbehavior were not related their parenting self-efficacy; however, their perceptions of their ability to control the child’s behaviors were linked with their attributions. Specifically, parents reported lower feelings of control when they perceived the child’s behaviors to be internal, stable, and global (see Table 7 for complete correlation coefficients).

The second broad goal of the study was to examine the predictive relationships between initial perceptions and treatment outcome, and the changes in certain initial
variables over time. The first hypothesis was that parental efficacy and control would increase from pre-treatment to post-treatment. This hypothesis was partially supported. Paired-samples t-tests were conducted to evaluate changes in parental efficacy and control over the course of MST treatment. First, it was found, as expected, that Parental Control did significantly increase throughout treatment, \( t(87) = 3.43, p = .001 \). Second, it was found that Parental Efficacy did significantly change from pre-treatment to post-treatment, \( t(87) = -2.01, p < .05 \); however, it changed in the opposite direction than hypothesized (see Table 8 for means). Specifically, parents reported lower parenting self-efficacy following treatment.

The next set of hypotheses in the study investigated variables as predictors of treatment outcome. The Time 2 Problem Severity score from the Ohio Scales was utilized as the treatment outcome variable. The first hypothesis involving hierarchical regression was that initial parent motivation would predict treatment outcome. For all hierarchical regression analysis, the Time 1 Ohio Scales Problem Severity score and treatment duration were entered in the first block, to control for pre-treatment severity and dose of treatment. The overall score from the PMI was then entered in the second block of variables. It was found that entry of Problem Severity and treatment duration into the model resulted in a significant contribution to the prediction of treatment outcome. Initial Problem Severity contributed the most to the model, followed by treatment length. However, the entry of the PMI score into the model did not result in significant improvement in the model to predict treatment outcome (see Table 9 for regression analyses).
The next hypothesis was an exploratory analysis of the predictive value of parental attributions on treatment outcome. The AQ Overall Attribution score was utilized as a succinct measure of attributions. As with the previous hierarchical regression analysis, Time 1 Problem Severity and treatment duration were entered into the model first and the second block of variables included the Overall Attribution score. The addition of the Overall Attribution variable did not contribute to the predictive model (see Table 10 for regression analyses).

The next hypothesis was that parental efficacy and control would be predictors of treatment outcome. Hierarchical regression analysis was conducted with Time 1 Problem Severity and treatment duration entered in the first block. The second block contained the Parental Efficacy subscale score and the Parental Control subscale score. Neither of these subscales contributed significantly to the predictive model, above what was accounted for by the initial Problem Severity (see Table 11 for regression analyses). Related to this hypothesis, analyses were proposed which sought to examine changes in parental self-efficacy as a mediator in predicting treatment outcome. Mediator tests were not conducted, due to the non-significance of initial self-efficacy in predicting outcome.

The final analysis was to include all main variables from the study into a model to predict treatment outcome. The AQ Overall score, PMI score, and PLOC Parental Efficacy and Parental Control scores were entered into the model, after controlling for Time 1 Problem Severity and treatment duration. It was found that the combination of these variables did not significantly contribute to the prediction treatment outcome (see Table 12 for regression analyses).
Discussion

This study set out to examine the relationships among parental attributions, motivation, and self-efficacy within the delivery of MST family based treatment for delinquent youth. The findings of this study provided additional support for the use of MST to treat delinquency among adolescents, and contributed to the field in several ways. First, parent attributions, motivation, and self-efficacy are related prior to treatment, and a pattern of correlations exists within the attribution domains. Second, it was indicated that parent attributions, motivation, and self-efficacy at pre-treatment did not predict treatment outcome, beyond initial severity and length of treatment. Third, parental self-efficacy did not improve over the course of treatment, although the parent’s sense of control over the child’s behaviors did increase. As an additional finding, it was revealed that MST for delinquent youth did produce changes in problem severity and youth functioning.

Parental Perceptions

Research on the associations of attributions and perceptions of parent control and efficacy is scant, and therefore the present findings contribute greatly to existing knowledge. In the current study, support was found for the association between parental attributions and parents’ perceptions of control of their child’s behavior. That is, the more negative attributions the parent had about the child’s behavior (i.e. internal, stable, global), the less control they felt they had over the behavior. However, parental self-efficacy was not correlated with attributions. Generally, the present study is aligned with findings from previous research, such that, attributions are associated with perceptions of parenting abilities (Baden & Howe, 1992; Campis et al., 1986). Interestingly, parents also
reported higher levels of parental self-efficacy, as compared to parental control of the child’s behavior. Specific to the current pattern of results, it could be suggested that, in the face of negative behaviors, parents feel that they lack control of the child’s behavior, but feel that they generally possess good parenting skills and abilities (i.e. parental self-efficacy). Hence, a significant association between their attributions and parental self-efficacy was not evident. As an illustration, if the parent views the child’s misbehaviors as due to something about the child, global, and stable, he or she may not feel like their parenting skills are to blame. Therefore, they may report that they feel less control over the child, but that their overall parental self-efficacy remains unchanged. Overall, parental self-efficacy is a broad construct (Jones & Prinz, 2005), and the multi-faceted nature of self-efficacy may account for the lack of association it and attributions about the child’s behavior.

The next aim of the study was to examine the associations between attributions and motivation for treatment. It was hypothesized that more global, stable, internal, and controllable attributions would be associated with lower motivation; however, the opposite association was found. Specifically, more negative attributions were associated with higher motivation. One explanation for this finding is possibly due to the characteristics of the treatment sample. Participants were parents of adolescents with serious delinquent behavior, most of whom have been involved with multiple mental health and juvenile justice systems prior to entering MST. It is possible that the majority of these parents would report a high motivation for change, regardless of their attributions. The PMI scores were extremely negatively skewed, indicating high motivation. As a result, there may not have been adequate range in variance to detect
associations, if they did exist. Finally, the association between attributions and motivation may be stronger among parents seeking outpatient treatment, or those who are entering treatment for the first time. As an example, negative attributions have been found to be associated with lower rates of initiating therapy and treatment participation, which are components of motivation (see Morrissey-Kane, 1999 for review). Related to treatment initiation, MST families differ from outpatient samples because often they are faced with little choice other than to enroll in the MST program, as it is often an alternative to removal of the youth from the home (Henggeler & Borduin, 1990; Henggeler et al., 1986). Future studies may want to examine the possible associations between motivation and attributions using a sample of parents from an outpatient therapy setting.

Treatment Outcome

The key finding regarding treatment outcome was that the variance in outcomes was significantly accounted for by initial severity of behaviors and the length of time in treatment. Problem severity was the most significant predictor for the success of MST treatment, followed by treatment duration as a predictor. The contribution of the severity and treatment length variables to treatment outcome is not surprising, and consistent with previous research (see Lambert & Ogles, 2004 for review). In the current study, it was expected that parental attributions, motivation and self-efficacy would contribute to a model to predict treatment outcome. However, none of these variables predicted treatment outcome beyond what was accounted for by initial pre-treatment severity and treatment duration.
A small number of studies have examined attributions as predictors of treatment outcome, and a few studies have demonstrated this link (Corcoran & Ivery, 2004; Morrissey-Kane & Prinz, 1999; Watson, 1986). In general, the application of attributional theory to the study of treatment outcome is scarce. More research on attributions and treatment outcome are needed to more solidly determine whether associations do exist between these variables. Related to parental self-efficacy, the results of this study are similar to previous analyses of the impact of parental cognitions on response to ADHD treatment (Hoza et al., 2000). In the study by Hoza and colleagues (2000), it was found that mothers’ parental self-efficacy was not related to treatment outcome; however, fathers’ low parental efficacy was related to worse treatment outcomes. The majority of respondents in the current study were mothers, and therefore results mirror those of the mothers in the study by Hoza and colleagues.

Parental motivation has also been found to be associated with treatment outcome (Nock & Photos, 2006), although research is limited. Results of the current study do not provide support for past findings in the associations between motivation and treatment outcomes. One reason for the inconsistent findings could be due to mediating variables that are partially controlled through the structure of MST. For example, Nock and Photos (2006) demonstrated that lower motivation was associated with lesser treatment success; however, they specifically found that lower motivation was related to perceptions of more barriers to treatment (e.g. transportation, financial burden). It could be suggested that the barriers were important factors in treatment drop-out and/or decreased positive outcomes. Many barriers are removed with MST, such that, therapy is provided in the home, parents do not pay for services, and sessions are scheduled according to the
family’s schedule (e.g. Henggeler, Pickrel, Brondino, & Crouch, 1996; Henggeler et al., 1998). In some respects, the findings of the current study, that pre-treatment variables are non-significant predictors of treatment outcome, is promising. These results suggest that regardless of parents’ perceptions and attitudes upon entry into MST treatment, their child was likely to improve. Therefore, the cognitive variables in this study were not significant barriers to treatment success.

Regardless of pre-treatment beliefs and variables, MST was an effective treatment for conduct problems in this study. The average Problem Severity score on the Ohio Scales moved from the clinical range into the normal range. Adaptive youth functioning (as measured by the Ohio Scales) also significantly increased through treatment. As an additional measure of success, the format of the AQ was such that the quantity of conduct and oppositional behaviors could be compared from pre-treatment to post-treatment. In all four domains of problem behaviors, the number of behaviors significantly decreased. This provides clear and useful information about the specific behaviors related to Conduct Disorder, Oppositional Defiant Disorder, and general delinquency, rather than an overall score of problem severity or functioning. All of these findings, in themselves, are promising and hopeful. Through these results, MST has once again proven itself to be an effective treatment as provided through community agencies.

One of the overarching goals of MST treatment is to empower the parents and increase their sense of control and ability to successfully parent their child (Borduin, 1999; Henggeler et al., 1998). As an example, MST teaches parents about the importance of monitoring the adolescent, consistency in rules, and appropriate consequences, all with the goal of empowering parents and increasing their control of the child (e.g. Henggeler
et al., 1998). The current results provide support for the goal of increasing a parent’s sense of control of the child. Parental perceptions of control significantly increased over the course of treatment, as expected. One surprising result was that parenting self-efficacy decreased throughout treatment. A suggestion for this finding could be related to awareness and change. That is, in order to create behavioral change, an individual needs to be aware of the maladaptive thoughts or behavior to be improved. As an example, Henggeler and colleagues (1999) noted that often parents have maladaptive or unrealistic cognitions regarding parenting practices. They note that one of the therapist’s duties is to increase parental knowledge of effective strategies and change maladaptive parental cognitions. Creating an awareness of dysfunctional parenting practices, may have decreased that parents’ sense of parenting self-efficacy and their perceptions that they are “good” at parenting. Although the parent is then provided with effective parenting strategies, thus increasing their sense of control, they may not have increased their belief in themselves as able to successfully continue the strategies. Self-efficacy is broad and somewhat stable construct; therefore, it is not expected that is should improve dramatically over the course of brief treatment (e.g. Poser, 1978). Rather, it may be expected that once parents continually implement the effective techniques taught through MST, and the child’s behavior improves, then their self-efficacy would increase. It should be noted however, that the parental control scores were higher (indicating less control) than parental efficacy scores at both pre-treatment and post-treatment time points. This suggests that, in general, the parents participating in MST may have higher parenting self-efficacy, even if they report low feelings of control.
An overall difference between past research and the present study is the treatment modality. Although studies may have included a sample of parents of adolescents, the setting was primarily within outpatient therapy or community settings. Many cognitive variables (e.g. attributions, motivation, self-efficacy, perceived barriers) interact that can contribute to poor treatment attendance and/or lack of adherence to treatment techniques (Kazdin, Holland, & Crowley, 1997; Kazdin & Wassell, 2000). Links have also been found between treatment attendance and outcome, and between adherence to treatment techniques and outcome (Nock & Ferriter, 2005; Nock & Kazdin, 2005; Kazdin, 1996; Staudt, 2007). Thus, a mediator model of cognitive variables and treatment outcome could be suggested. This model may not appropriately fit the MST framework, because the therapists go the family’s home (i.e. reducing barriers, increasing attendance, and lessening drop out), and sessions are held several times a week (i.e. increasing adherence and practice of treatment techniques). Therefore, it could be suggested that parental beliefs may not play as large a role in treatment outcome in MST, due to the already intensive, individualized nature of the treatment. Parental perceptions should not be completely dismissed, because there are important clinical implications for enhancing motivation, exploring parents’ beliefs about their child’s behavior, and building the parent’s confidence in their ability to successfully parent their child. Related to research, it would be worthwhile for future studies to examine the combination of these perceptual variables in an outpatient sample, where there is more variability and control by the parents.
Clinical Implications

The study provides strong support for MST provided through community mental health agencies. MST was found to be an effective treatment for conduct problems, as measured by both the Ohio Scales and also the behavior portion of the AQ. Effective treatment of conduct problems is important in several respects. Clinically, improvement in behavior and functioning helps the youth currently, and also reduces the risk of future offending and recidivism (e.g. Borduin et al., 1995; Curtis et al., 2004; Henggeler et al., 1993). MST is also effective at increasing general family functioning, more positive parent-child relationships, and effective parenting (e.g. Henggeler et al., 1986). These parenting and family variables are known risk factors for the development, and continuance, of antisocial behavior (Farrington, 2004, 2005; Domburgh, Loeber, Bezemer, Stallings, & Stouthamer-Loeber, 2009), therefore improvement is potentially life-altering. In addition, effective treatment can lessen financial and societal burdens, as improvement reduces the costs associated with involvement in juvenile justice, residential treatment, as well as other services involved with juvenile delinquency (e.g. Foster & Jones, 2005; Welsh et al., 2009).

The present study demonstrates that, regardless of the parents’ cognitive perceptions, as measured in this study, change can occur. This may be due to the training and effort that the MST therapists place on reducing barriers, including cognitive and perceptual barriers, which may impede treatment. It is recommended that the variables in this study be addressed by the therapists, as part of initial engagement in treatment. As an example, knowledge of a parent’s attributions regarding the child’s misbehavior may guide explanation of treatment rationale, and also indicate which attributions should be
reframed to be more “positive”. Although extensive research is lacking, the variables in this study have been shown in previous studies to be linked to treatment outcome (e.g. Hoza et al., 2000; Morrissey-Kane & Prinz, 1999; Nock & Photos, 2006). Therefore, they should not be discarded because significance was not reached in the current study. The current study was the first to examine these variables in the context of MST. Future MST studies may want to continue to include cognitive and perceptual variables to further determine whether parental cognitions are important factors in this treatment modality.

One important clinical implication gleaned from this study is the finding of an increase in parental control, but a decrease in parental efficacy. It is suggested that time should be spent assessing, and then addressing, parents’ overall feelings of self-efficacy in their parenting abilities. Providing the parents with techniques and strategies to control the child’s behavior may not be enough to maintain lasting change. Helping parents gain confidence (i.e. self-efficacy) in their abilities as a parent may be helpful and worthwhile, therefore lessening the decrease in self-efficacy over treatment. One of the main goals of MST is to empower the parents, but support for this goal is mixed, given the current results. The goal of providing parents with effective strategies is accomplished, but the parent’s belief in himself or herself needs to be strengthened. At the conclusion of treatment, MST therapists may want to process with the parents, their perceptions of their ability to effectively implement the newly learned strategies. The overall message is that both parenting skills and efficacy need to be accounted for when planning and implementing treatment.
Limitations and Future Directions

The present study contains several limitations that should be addressed in future studies. First, the data was collected in five different agencies, with differing administrative structures and contextual influences. Because the data was collected by each agency, there was less control and standardization of the data collection process than might be typically hoped for. If a similar study were conducted in the future, the participating agencies should be monitored more closely to ensure closer adherence to data collection procedures. Closer monitoring may have increased the number of participants who completed both Time 1 and Time 2 data. Similarly, the programs did not consistently record the number of families who did not have the opportunity to participate, or who declined. Closer supervision of the data collection process may have increased the number of participants to whom participation was offered. Another limitation to the study is that information regarding previous mental health treatment, and perceptions of past treatment, were not obtained. However, in practice it is known that many of the families receive MST treatment because other mental health services (e.g. outpatient therapy, case management, residential treatment) have failed to provide lasting change. The likelihood that perceptions of past treatment would influence the findings is low, although in future studies this information should be collected.

The sample size of the current study, while it is similar to, or greater than, many other MST studies, is somewhat low for detecting significance in the multiple regression analyses. Therefore, it may be that the current analyses lacked adequate power to detect relationships between the predictor variables and treatment outcome. Tabachnick and Fidell (2001) state that a way to increase power is to combine variables into fewer
independent variables (e.g. combining the attribution domains into an overall attribution score), or remove the number of independent variables (e.g. remove covariates). These techniques were applied, which should have put the sample size at an adequate number for the analyses; however, statistical significance still was not obtained. The amount of variance accounted for by pre-treatment severity and treatment duration was significant enough that additional variables did not enhance the predictive power on treatment outcome. Another potential reason for non-significant results in the correlation and regression analyses may have been because the scores on some of the measures were skewed. Specifically, the scores on the PMI were negatively skewed, due to the high level of reported motivation for treatment. This high level of motivation is not surprising due to the severity of the child’s behavior that is bringing the family into MST services. Therefore, while the PMI is a valid measure, it did have a restricted range of responses, making it difficult to achieve significant correlations with other variables.

To gain further knowledge about parental perceptions, future studies could also include a community control group sample, to which the MST families could be compared. The current study only examined families in treatment, therefore can only provide information on the pattern of relationships between the variables, and cannot draw conclusions regarding whether the perceptions of parents involved in MST treatment for their child differ from parents of non-problem children. Both attributions and parental self-efficacy are worthwhile variables to examine further by comparing across parents of problem and non-problem children. By comparing the perceptions of the two groups of parents, it could be determined whether the associative patterns found
in the current study pertain only to parents of children with conduct problems, or are similar among all parents.
Summary and Conclusions

This study is one of a few studies examining the pattern of relationships between parental attributions, self-efficacy and treatment motivation among parents of adolescents with delinquent behaviors. Moreover, these variables have never been examined in the context of MST treatment. Although MST has a large research base (e.g. see Schaeffer & Borduin, 2009 for review), very few studies have examined parental perceptions, such as attributions, as possible factors that may influence treatment. Although the current study did not provide support for attributions, parental self-efficacy, or motivation as significant predictors of treatment outcome, it did provide valuable empirical and clinical information. The results of this study show strong support for MST as an effective treatment for conduct problems among youth, as demonstrated by decreased problem severity, increased adaptive youth functioning, and a decrease in oppositional and conduct problems. In addition, through the course of treatment, parents reported an increase in their perceptions of control of the child’s behavior, which is one of the important overarching goals of MST.

Apart from measuring treatment outcome, this study examined the relationships between several perceptual variables among parents. Similar to other research (Morrissey-Kane & Prinz, 1999), an association between attributions and parental perceptions of control of the child’s behavior was found. Associations were also found between parental attributions, namely locus of causality and globality, and motivation for treatment. These results offer a descriptive representation of the relationships between these variables among parents of adolescents with delinquency problems. Overall, this
study provides a preliminary examination of parental perceptions that may influence the treatment process and support for the effectiveness of MST services.
References


### Table 1

*Descriptive Characteristics of Parents*

<table>
<thead>
<tr>
<th>Household composition</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single mother</td>
<td>85 (59.9%)</td>
</tr>
<tr>
<td>Single father</td>
<td>11 (7.7%)</td>
</tr>
<tr>
<td>Two biological parents</td>
<td>16 (11.3%)</td>
</tr>
<tr>
<td>Biological parent and step-parent</td>
<td>17 (12%)</td>
</tr>
<tr>
<td>Relative</td>
<td>12 (8.5%)</td>
</tr>
<tr>
<td>Other</td>
<td>2 (1.4%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parent Education</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8th grade or lower</td>
<td>7 (4.9%)</td>
</tr>
<tr>
<td>Partial high school</td>
<td>28 (19.7%)</td>
</tr>
<tr>
<td>Completed high school</td>
<td>40 (38.2%)</td>
</tr>
<tr>
<td>Some college</td>
<td>46 (33%)</td>
</tr>
<tr>
<td>College degree</td>
<td>16 (11.5%)</td>
</tr>
<tr>
<td>Master’s degree or higher</td>
<td>2 (1.4%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Caucasian</td>
<td>93 (66.4%)</td>
</tr>
<tr>
<td>African-American</td>
<td>26 (18.6%)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>7 (5.0%)</td>
</tr>
<tr>
<td>Bi-racial/Other</td>
<td>14 (10.0%)</td>
</tr>
<tr>
<td></td>
<td>M (SD)</td>
</tr>
<tr>
<td>---------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Parent age (M, SD)</td>
<td>41.01 (8.79)</td>
</tr>
<tr>
<td>Age at first child M (SD)</td>
<td>21.64 (5.45)</td>
</tr>
<tr>
<td>Socioeconomic Status M (SD)</td>
<td>26.78 (13.92)</td>
</tr>
</tbody>
</table>
### Table 2

**Descriptive Characteristics of Youth**

<table>
<thead>
<tr>
<th></th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>91 (64%)</td>
</tr>
<tr>
<td>Female</td>
<td>51 (36%)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>95 (66.9%)</td>
</tr>
<tr>
<td>African-American</td>
<td>28 (19.7%)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>5 (3.5%)</td>
</tr>
<tr>
<td>Bi-racial/Other</td>
<td>14 (9.9%)</td>
</tr>
<tr>
<td><strong>Grade</strong></td>
<td></td>
</tr>
<tr>
<td>5th grade or below</td>
<td>10 (7.0%)</td>
</tr>
<tr>
<td>6th grade</td>
<td>11 (7.7%)</td>
</tr>
<tr>
<td>7th grade</td>
<td>18 (12.7%)</td>
</tr>
<tr>
<td>8th grade</td>
<td>16 (11.3%)</td>
</tr>
<tr>
<td>9th grade</td>
<td>49 (34.5%)</td>
</tr>
<tr>
<td>10th grade</td>
<td>21 (14.8%)</td>
</tr>
<tr>
<td>11th grade</td>
<td>12 (8.5%)</td>
</tr>
<tr>
<td>12th grade</td>
<td>4 (2.8%)</td>
</tr>
<tr>
<td><strong>Child Age M (SD)</strong></td>
<td>14.37 (1.85)</td>
</tr>
</tbody>
</table>
Table 3

*Descriptive Statistics for Pre-Treatment Measures*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean (SD)</th>
<th>Min</th>
<th>Max</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attribution Questionnaire (AQ)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locus of Causality</td>
<td>4.39 (1.16)</td>
<td>1</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Stability</td>
<td>2.63 (1.44)</td>
<td>1</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Globality</td>
<td>4.46 (1.16)</td>
<td>1</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Controllability</td>
<td>4.53 (2.18)</td>
<td>1</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Problem Due to Parenting</td>
<td>2.95 (1.40)</td>
<td>1</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Problem Due to Friends</td>
<td>3.61 (1.50)</td>
<td>1</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Problem Due to School</td>
<td>3.30 (1.46)</td>
<td>1</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Overall Attribution Score</td>
<td>4.01 (.82)</td>
<td>1</td>
<td>6</td>
<td>4.25</td>
</tr>
<tr>
<td><strong>Parental Locus of Control (PLOC)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parental Efficacy</td>
<td>20.99 (6.30)</td>
<td>9</td>
<td>45</td>
<td>29</td>
</tr>
<tr>
<td>Parental Control</td>
<td>29.87 (8.27)</td>
<td>10</td>
<td>50</td>
<td>39</td>
</tr>
<tr>
<td><strong>Parent Motivation Inventory (PMI)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Motivation</td>
<td>4.54 (.50)</td>
<td>1</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Desire for Change</td>
<td>4.60 (.60)</td>
<td>1</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Perceived Ability to Change</td>
<td>4.27 (.69)</td>
<td>1</td>
<td>5</td>
<td>2.71</td>
</tr>
<tr>
<td>Readiness for Change</td>
<td>4.59 (.51)</td>
<td>1</td>
<td>5</td>
<td>2.75</td>
</tr>
</tbody>
</table>

Note: AQ: N = 139. Higher numbers indicate more negative attributions
PLOC: N = 142. Higher numbers indicate lower levels of control and efficacy
PMI: N = 141. Higher numbers indicate higher levels of motivation
Table 4

*Parent, Worker, and Youth Ohio Scales Pre-Treatment vs. Post-Treatment Comparisons*

<table>
<thead>
<tr>
<th></th>
<th>Parent</th>
<th>Worker</th>
<th>Youth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
</tr>
<tr>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
</tr>
<tr>
<td>Problem Severity</td>
<td>28.39</td>
<td>16.97**</td>
<td>28.61</td>
</tr>
<tr>
<td></td>
<td>(17.82)</td>
<td>(14.41)</td>
<td>(12.91)</td>
</tr>
<tr>
<td>Youth Functioning</td>
<td>40.91</td>
<td>51.64**</td>
<td>37.73</td>
</tr>
<tr>
<td></td>
<td>(18.33)</td>
<td>(17.19)</td>
<td>(14.44)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(16.14)</td>
</tr>
</tbody>
</table>

*Note:* **p < .001 (t-test comparisons)*

Parent N = 120; Worker N = 115; Youth N = 76
Table 5

*Correlations between Attribution Domains at Time 1*

<table>
<thead>
<tr>
<th></th>
<th>Causality</th>
<th>Stability</th>
<th>Globality</th>
<th>Controllability</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Causality</td>
<td>--</td>
<td>.21*</td>
<td>.43***</td>
<td>.28***</td>
<td>.71***</td>
</tr>
<tr>
<td>Stability</td>
<td>--</td>
<td>--</td>
<td>.23**</td>
<td>.08</td>
<td>.63***</td>
</tr>
<tr>
<td>Globality</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>.17</td>
<td>.67***</td>
</tr>
<tr>
<td>Controllability</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>.59***</td>
</tr>
<tr>
<td>Overall</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

*Note:* *p < .05; ** p < .01; ***p < .001; N = 139

Table 6

*Correlations between Attribution Domains and PMI at Time 1*

<table>
<thead>
<tr>
<th></th>
<th>Overall Motivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Causality</td>
<td>.30***</td>
</tr>
<tr>
<td>Stability</td>
<td>-.11</td>
</tr>
<tr>
<td>Globality</td>
<td>.31**</td>
</tr>
<tr>
<td>Control</td>
<td>.13</td>
</tr>
<tr>
<td>Overall</td>
<td>.22**</td>
</tr>
</tbody>
</table>

*p < .01; **p < .001; N = 138*
Table 7

*Correlations between Attribution Domains and PLOC at Time 1*

<table>
<thead>
<tr>
<th></th>
<th>Parental Control</th>
<th>Parental Efficacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Causality</td>
<td>.19*</td>
<td>-.03</td>
</tr>
<tr>
<td>Stability</td>
<td>.38**</td>
<td>.37**</td>
</tr>
<tr>
<td>Globality</td>
<td>.35**</td>
<td>.05</td>
</tr>
<tr>
<td>Controllability</td>
<td>.07</td>
<td>-.14</td>
</tr>
<tr>
<td>Overall</td>
<td>.38**</td>
<td>.12</td>
</tr>
</tbody>
</table>

*p < .01; **p < .001; N = 139*
Table 8

*Parental Locus of Control Scale Pre-Treatment vs. Post-Treatment Comparisons*

<table>
<thead>
<tr>
<th></th>
<th>Pre Mean (SD)</th>
<th>Post Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parental Efficacy</strong></td>
<td>20.69 (5.49)</td>
<td>22.34 (7.48)*</td>
</tr>
<tr>
<td><strong>Parental Control</strong></td>
<td>29.87 (7.93)</td>
<td>26.10 (8.62)**</td>
</tr>
</tbody>
</table>

Note: *N = 88. On the PLOC, higher numbers indicate lower efficacy and control.  
* p < .05; **p < .001  (t-test comparisons)
Table 9

*Hierarchical Regression of Parent Motivation as a Predictor of Treatment Outcome*

<table>
<thead>
<tr>
<th>Time 2 Problem Severity</th>
<th>ΔR²</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1 Problem Severity</td>
<td>.24**</td>
<td>.44**</td>
</tr>
<tr>
<td>Treatment Duration</td>
<td></td>
<td>-.23*</td>
</tr>
<tr>
<td>Total R²</td>
<td></td>
<td>.26**</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td></td>
<td>.24</td>
</tr>
</tbody>
</table>

Note: *p < .01; **p < .001; N = 119
<table>
<thead>
<tr>
<th>Step</th>
<th>Time 2 Problem Severity</th>
<th>ΔR²</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>.25**</td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1 Problem Severity</td>
<td>.44**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment Duration</td>
<td>-.23*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>T1 Problem Severity</td>
<td>.44**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment Duration</td>
<td>-.23*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Attribution</td>
<td>-.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total R²</td>
<td>.25**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Adjusted R²  .24

Note: *p < .01; **p < .001; N = 117
Table 11

*Hierarchical Regression of Parental Efficacy and Control as Predictors of Treatment Outcome*

<table>
<thead>
<tr>
<th>Time 2 Problem Severity</th>
<th>( \Delta R^2 )</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1 Problem Severity</td>
<td>.24**</td>
<td></td>
</tr>
<tr>
<td>Treatment Duration</td>
<td>-.23*</td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>T1 Problem Severity</td>
<td>.44**</td>
<td></td>
</tr>
<tr>
<td>Treatment Duration</td>
<td>-.23*</td>
<td></td>
</tr>
<tr>
<td>Parental Efficacy</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>Parental Control</td>
<td>.003</td>
<td></td>
</tr>
<tr>
<td><strong>Total R^2</strong></td>
<td>.25**</td>
<td></td>
</tr>
<tr>
<td><strong>Adjusted R^2</strong></td>
<td>.23</td>
<td></td>
</tr>
</tbody>
</table>

Note: *p < .01; **p < .001; N = 120
Table 12

Hierarchical Regression with All Variables as Predictors of Treatment Outcome

<table>
<thead>
<tr>
<th>Step</th>
<th>ΔR²</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1 Problem Severity</td>
<td>.44**</td>
<td></td>
</tr>
<tr>
<td>Treatment Duration</td>
<td>-.23*</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>T1 Problem Severity</td>
<td>.44**</td>
<td></td>
</tr>
<tr>
<td>Treatment Duration</td>
<td>-.23*</td>
<td></td>
</tr>
<tr>
<td>Overall Attribution</td>
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<td></td>
</tr>
<tr>
<td>Overall Motivation</td>
<td>.02</td>
<td></td>
</tr>
<tr>
<td>Parental Efficacy</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>Parental Control</td>
<td>.003</td>
<td></td>
</tr>
<tr>
<td>Total R²</td>
<td>.26**</td>
<td></td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>.21</td>
<td></td>
</tr>
</tbody>
</table>

Note: *p < .01; **p < .001; N = 116
Appendix A

MST Program Structure and Goals

The structure of MST treatment is unique in many respects, as compared to other treatment modalities. First, there is an especially strong commitment to specialized training, evidence-based practice, and outcome assessment throughout all aspects of MST. All MST therapists and supervisors hold an advanced degree in social work, counseling, or mental health specialty. In addition, all MST therapists and supervisors must attend intensive training, both initially and periodically, on the goals and intervention strategies central to all MST treatment. An MST program is comprised of one or more “treatment teams”, and each team has a trained MST supervisor and two to four MST therapists. The treatment team also has an “expert consultant” with whom they conduct weekly phone consultations. Within the treatment teams, each MST therapist is assigned a small caseload, usually three to six families. The reason behind the small caseload is because MST is highly intensive; therapists often meet with their clients several times a week and are accessible 24 hours a day, 7 days a week. A consequence for keeping a small caseload, and close direct contact with the families, is that the entrance criteria into an MST program is fairly strict. There are no set guidelines, but the majority of youths are referred through juvenile justice/probation and child welfare agencies. These youth are often at imminent risk for being removed from the home, and the financial costs to the justice and welfare systems are usually quite high.

Once a family enters MST treatment, and is assigned a therapist, the therapist conducts an assessment of the family, sets measurable goals, and designs interventions. The goal setting and intervention planning phases are all completed in close collaboration
with the MST supervisor and expert consultant. This advanced level of supervision is to maintain adherence to the principles of MST (see below) and evidence-based interventions. Throughout treatment, adherence to the model is assessed using standardized measures designed specifically for MST. Specifically, the client rates the therapist on adherence to the MST principles, the therapist rates the supervisor on adherence, and the supervisor rates the consultant. In this way, adherence to the principles is checked and measured at all level, with the goal of increasing positive outcomes.

MST Principles

Principle 1: The primary purpose of assessment is to understand the fit between the identified problems and their broader systemic context.

Principle 2: Therapeutic contacts emphasize the positive and use systemic strengths as levers for change.

Principle 3: Interventions are designed to promote responsible behavior and decrease irresponsible behavior among family members.

Principle 4: Interventions are present focused and action oriented, targeting specific and well-defined problems.

Principle 5: Interventions target sequences of behavior within and between multiple systems that maintain the identified problems.

Principle 6: Interventions are developmentally appropriate and fit the developmental needs of the youth.

Principle 7: Interventions are designed to require daily or weekly effort by family members.
Principle 8: Intervention effectiveness is evaluated continuously from multiple perspectives with providers assuming accountability for overcoming barriers to successful outcomes.

Principle 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.
Appendix B

Forms and Measures

Ohio University Consent Form

Title of Research: The Impact of Parental Attributions and Characteristics on Treatment Outcome in Multisystemic Treatment for Delinquent Youth

Researchers: Dr. Benjamin Ogles, Ph.D. and Lindsay Johannes, M.S.

You are being asked to participate in research. For you to be able to decide whether you want to participate in this project, you should understand what the project is about, as well as the possible risks and benefits in order to make an informed decision. This process is known as informed consent. This form describes the purpose, procedures, possible benefits, and risks. It also explains how your personal information will be used and protected. Once you have read this form and your questions about the study are answered, you will be asked to sign it. This will allow your participation in this study. You should receive a copy of this document to take with you.

Explanation of Study
This study will look at caregivers' attitudes about their child's behavior, and personal attitudes toward parenting and treatment. In the study, caregivers will be asked to fill out questionnaires at the beginning of treatment, and then again at the end of treatment. Each set of questionnaires should take approximately 30 minutes to fill out. Also, participation in the study will involve collecting basic information and scores from the Ohio Scales from the MST center that was answered as part of intake into MST services. The Ohio Scales are completed by the parent, youth, and therapist, and scores from all three sources will be collected and used in the study.

Risks and Discomforts
There is a risk for breach of confidentiality.

Benefits
Information from this study will help understand general characteristics of caregivers involved in MST treatment for their child. The information will also help improve MST programs.

Confidentiality and Records
All information that is collected and completed questionnaires will not have any names or identifying information, and will be anonymous to the researchers outside the MST center. To protect against a breach of confidentiality, all information and Ohio Scales will be de-identified before leaving the MST center. The researchers are from Ohio University and are not directly associated with
the MST program. The researchers do not know the names or identities of any participants in the study. To further protect the information, the questionnaires will be stored at the MST center in a secure room, and then will be stored at Ohio University in a locked cabinet.

Additionally, while every effort will be made to keep your study-related information confidential, there may be circumstances where this information must be shared with:
* Federal agencies, for example the Office of Human Research Protections, whose responsibility is to protect human subjects in research;
* Representatives of Ohio University (OU), including the Institutional Review Board, a committee that oversees the research at OU

**Compensation**  
Participation in the will include a 10.00 gift card for the completion of intake questionnaires and another 10.00 gift card for the completion of questionnaires at the end of treatment.

**Contact Information**  
If you have any questions regarding this study, please contact Lindsay Johannes, M.S., (740) 597-2565, lj138904@ohio.edu, or Dr. Benjamin Ogles, Ph.D., (740) 597-1833, ogles@ohio.edu

If you have any questions regarding your rights as a research participant, please contact Jo Ellen Sherow, Director of Research Compliance, Ohio University, (740)593-0664.

By signing below, you are agreeing that:
- you have read this consent form (or it has been read to you) and have been given the opportunity to ask questions
- known risks to you have been explained to your satisfaction.
- you understand Ohio University has no policy or plan to pay for any injuries you might receive as a result of participating in this research protocol.
- you are 18 years of age or older
- your participation in this research is given voluntarily
- you may change your mind and stop participation at any time without penalty or loss of any benefits to which you may otherwise be entitled.

Child Name ____________________________

Signature_________________________________ Date______________

Parent Printed Name______________________
Assent Form

Title of Research: The Impact of Parental Attributions and Characteristics on Treatment Outcome in Multisystemic Treatment for Delinquent Youth

My name is Lindsay Johannes. I am trying to learn about what parents involved in MST programs think, and how it is related to treatment because it may help us understand how to improve treatment and help families. If you would like, you can be in my study.

If you decide you want to be in my study, you will give permission to use the information from the Ohio Scales that you already filled out at the beginning of treatment. You will not need to do any extra work or fill out any extra forms.

There are not many risks in the study, except that some teens may not feel comfortable sharing their information with people other than their therapist. Your name will not be on any information included in the study. A benefit to being in the study is that it will help give information about how parents’ thoughts impact treatment. It may also help the MST program improve treatment for future families.

Other people will not know if you are in my study. I will put things I learn about you together with things I learn about other teens and families, so no one can tell what things came from you. When I tell other people about my research, I will not use your name, so no one can tell who I am talking about.

Your parents or guardian have to say it’s OK for you to be in the study. After they decide, you get to choose if you want to do it too. If you don’t want to be in the study, no one will be mad at you. If you want to be in the study now and change your mind later, that’s OK. Being in the study will not change the way your parents or therapist think of you, and will not change your treatment.

My telephone number is 740-597-2565. You can call me if you have questions about the study or if you decide you don’t want to be in the study any more. I will give you a copy of this form in case you want to ask questions later.

Agreement
I have decided to be in the study even though I know that I don’t have to do it. All of my questions have been answered.

______________________________   ________________
Signature of Study Participant   Date

______________________________   ________________
Signature of Researcher     Date
Demographic Information

Relationship to the client (please circle):

Mother  Step-mother  Grandmother  Aunt  Other: ______
Father  Step-father  Grandfather  Uncle

Your age: ___________

Age of child: ________________

Child gender:  Male  Female

Race (please circle):

:  White/Caucasian  Hispanic (non-white)
   African-American  Asian or Pacific Islander
   Bi/Multi-racial  Other

Highest level of education (please circle):

8th grade or lower  9th  10th  11th  12th

Some college  College degree  Master’s degree or higher
Attribution Questionnaire

Please check all behaviors that your child displays:

- □ Sets things on fire that should not be
- □ Lies
- □ Cruel to animals
- □ Steals
- □ Damages property

Please answer the following questions about the reasons for the behaviors you checked above.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

1. My child’s behavior was due to something about him or her

2. My child’s behavior was due to something about my parenting

3. My child’s behavior was due to something about his or her friends

4. My child’s behavior was due to something about his or her school or the neighborhood

5. The reason my child did these behaviors is not likely to change

6. The reason my child did this is something that affects other areas of his or her life

7. These reason my child did these behaviors are within the his or her control

Please check all behaviors that your child displays:

- □ Fights or bullies others
- □ Assults others
- □ Blames others
- □ Cruel to other people
- □ Spiteful/Mean

Please answer the following questions about the reasons for the behaviors you checked above.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
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</tr>
</tbody>
</table>

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3. My child’s behavior was due to something about his or her friends

4. My child’s behavior was due to something about his or her school or the neighborhood

5. The reason my child did these behaviors is not likely to change

6. The reason my child did this is something that affects other areas of his or her life
7. These reason my child did these behaviors are within the 1 2 3 4 5 6
his or her control

Please check all behaviors that your child displays:

☐ Runs away from home       ☐ Swears              ☐ Uses drugs and/or alcohol  
☐ Skips school               ☐ Breaks rules at home or school

Please answer the following questions about the reasons for the behaviors you checked above.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
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<td>3</td>
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<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

1. My child’s behavior was due to something about him or her
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3. My child’s behavior was due to something about his or her friends
4. My child’s behavior was due to something about his or her school or the neighborhood
5. The reason my child did these behaviors is not likely to change
6. The reason my child did this is something that affects other areas of his or her life
7. These reason my child did these behaviors are within the 1 2 3 4 5 6
his or her control

Please check all behaviors that your child displays:

☐ Defies adults or authority       ☐ Argues with others              ☐ Touchy or easily angered
☐ Annoys others                    ☐ Loses temper easily             ☐ Stubborn
☐ Angry

Please answer the following questions about the reasons for the behaviors you checked above.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
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<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

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2. My child’s behavior was due to something about my parenting
3. My child’s behavior was due to something about his or her friends
4. My child’s behavior was due to something about his or her school or the neighborhood
5. The reason my child did these behaviors is not likely to change
6. The reason my child did this is something that affects other areas of his or her life

7. These reason my child did these behaviors are within his or her control

### Parent Motivation Inventory

**For each question, decide how much you disagree or agree with the statement and circle the number.**

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>My child’s behavior has to improve soon.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>2.</td>
<td>I am willing to work on changing my own behavior as it relates to managing my child.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>3.</td>
<td>It is very important for the well-being of my family that my child changes his/her behavior.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>4.</td>
<td>I am prepared to participate in treatment for several months in order to change my child’s behavior.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>5.</td>
<td>Although the main problem is with my child’s behavior, I believe I should be involved in treatment.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>6.</td>
<td>It is very important for the well-being of my child that he/she changes his/her behavior.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>7.</td>
<td>I am willing to change my current parenting techniques and try new ones.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>8.</td>
<td>I think the benefits of this treatment will be greater than the costs.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>9.</td>
<td>I would like my child’s behavior to change.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>10.</td>
<td>I am willing to try parenting techniques even if I think they might not work.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>11.</td>
<td>I want to be involved in my child’s treatment at this point in time.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>12.</td>
<td>My child will experience many negative outcomes in life if his/her behavior does not change.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>13.</td>
<td>I am motivated to practice the techniques I will learn in session at home with my child.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>14.</td>
<td>I believe that my child’s behavior cannot change without my involvement in treatment.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>15.</td>
<td>My family will experience many negative outcomes in life if my child’s behavior does not change.</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>
16. I am eager to participate in treatment. 1 2 3 4 5
17. I believe that changing my own behavior can cause my child’s behavior to change. 1 2 3 4 5
18. I want my child’s behavior to improve. 1 2 3 4 5
19. I am motivated to change the way I reward and punish my child if it will lead to improvement. 1 2 3 4 5
20. I believe that I can learn to change my child’s behavior. 1 2 3 4 5
21. I am motivated to participate in my child’s treatment. 1 2 3 4 5
22. Participation in this treatment is a top priority in my schedule and that of my child. 1 2 3 4 5
23. I believe that I am capable of learning the skills needed to change my child’s behavior. 1 2 3 4 5
24. I look forward to learning new techniques for managing my child’s behavior. 1 2 3 4 5
25. I am motivated to work with a therapist in order to change my own behavior. 1 2 3 4 5
Parental Locus of Control Scale

For each question, decide how much you disagree or agree with the statement and circle the number.

1. What I do has little effect on my child’s behavior

2. When something goes wrong between me and my child, there is little I can do to correct it.

3. Parents should address problems with their children because ignoring them won’t make them go away.

4. If your child tantrums no matter what you try, you might as well give up.

5. No matter how hard a parent tries, some children will never learn to mind.

6. I am often able to predict my child’s behavior in situations

7. It is not always wise to expect too much from my child because many things turn out to be a matter of good or back luck anyway.

8. When my child gets angry, I can usually deal with him/her if I stay calm.

9. When I set expectations for my child, I am almost certain that I can help him/her meet them.

10. I always feel in control when it comes to my child.

11. My child’s behavior is sometimes more than I can handle.

12. Sometimes I feel that my child’s behavior is hopeless.

13. It is often easier to let my child have his/her way than to put up with a tantrum.

14. I find that sometimes my child can get me to do things I really did not want to do.

15. My child often behaves in a manner very different from the way I would want him/her to behave.

16. Sometimes when I’m tired I let my children do things I normally wouldn’t.

17. Sometimes I feel that I do not have enough control over the direction my child’s life is taking.

18. I allow my child to get away with things.

19. It is not too difficult to change my child’s mind about something.
# Appendix C

## Supplementary Statistical Tables

*Parent, Worker, and Youth Ohio Scales Means*

<table>
<thead>
<tr>
<th></th>
<th>Parent</th>
<th>Worker</th>
<th>Youth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
</tr>
<tr>
<td>N</td>
<td>N = 142</td>
<td>N = 120</td>
<td>N = 127</td>
</tr>
<tr>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
</tr>
<tr>
<td>Problem Severity</td>
<td>28.92</td>
<td>16.97</td>
<td>29.31</td>
</tr>
<tr>
<td>Youth Functioning</td>
<td>40.50</td>
<td>51.64</td>
<td>37.98</td>
</tr>
</tbody>
</table>
### Attribution Questionnaire Pre-Treatment vs. Post-Treatment Comparisons

<table>
<thead>
<tr>
<th></th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(M, SD)</td>
<td>(M, SD)</td>
</tr>
<tr>
<td><strong>Locus of Causality</strong></td>
<td>4.51 (1.23)</td>
<td>4.61 (1.29)</td>
</tr>
<tr>
<td><strong>Stability</strong></td>
<td>2.50 (1.36)</td>
<td>2.74 (1.47)</td>
</tr>
<tr>
<td><strong>Globality</strong></td>
<td>4.42 (1.38)</td>
<td>4.53 (1.49)</td>
</tr>
<tr>
<td><strong>Controllability</strong></td>
<td>4.53 (1.28)</td>
<td>4.57 (1.49)</td>
</tr>
<tr>
<td>Problem Due to Parenting</td>
<td>2.95 (1.40)</td>
<td>2.70 (1.39)</td>
</tr>
<tr>
<td>Problem Due to Friends</td>
<td>3.61 (1.50)</td>
<td>3.58 (1.59)</td>
</tr>
<tr>
<td>Problem Due to School</td>
<td>3.30 (1.46)</td>
<td>3.07 (1.48)</td>
</tr>
<tr>
<td><strong>Overall Attribution Score</strong></td>
<td>3.98 (.85)</td>
<td>4.03 (.91)</td>
</tr>
<tr>
<td>Total CN behaviors</td>
<td>2.34 (1.53)</td>
<td>1.98 (1.25)*</td>
</tr>
<tr>
<td>Total CD behaviors</td>
<td>2.03 (1.27)</td>
<td>1.40 (1.18)**</td>
</tr>
<tr>
<td>Total ON behaviors</td>
<td>4.60 (2.52)</td>
<td>4.00 (2.55)*</td>
</tr>
<tr>
<td>Total OD behaviors</td>
<td>2.55 (1.67)</td>
<td>2.00 (1.53)**</td>
</tr>
</tbody>
</table>

**Note:** CN = Covert-Nondestructive; CD = Covert-Destructive; ON = Overt-Nondestructive; OD = Overt-Destructive, as obtained from the Attribution Questionnaire behaviors.

N = 86  
* p < .05; **p < .001  (Pre-treatment vs. Post-treatment t-test comparisons)
### Correlations Between All Time 1 Variables and Time 2 Outcome Variable

<table>
<thead>
<tr>
<th></th>
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<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
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</thead>
<tbody>
<tr>
<td>1. Causality</td>
<td>.21*</td>
<td>.43**</td>
<td>.28**</td>
<td>.71**</td>
<td>.19*</td>
<td>- .03</td>
<td>.30**</td>
<td>.20**</td>
<td>.21**</td>
<td>.05</td>
<td>-.06</td>
</tr>
<tr>
<td>2. Stability</td>
<td>--</td>
<td>.23*</td>
<td>.08</td>
<td>.63**</td>
<td>.37**</td>
<td>.37**</td>
<td>-.11</td>
<td>.34**</td>
<td>-.28**</td>
<td>.17</td>
<td>-.20*</td>
</tr>
<tr>
<td>3. Globality</td>
<td>--</td>
<td>.17</td>
<td>.67**</td>
<td>.35**</td>
<td>.05</td>
<td>.31**</td>
<td>.16</td>
<td>-.17</td>
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<td>-.16</td>
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<td>4. Controllability</td>
<td>--</td>
<td>.59**</td>
<td>.07</td>
<td>-.14</td>
<td>.13</td>
<td>.09</td>
<td>-.03</td>
<td>-.01</td>
<td>-.01</td>
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<tr>
<td>5. Overall Attribution</td>
<td>--</td>
<td>.38**</td>
<td>.12</td>
<td>.22**</td>
<td>.32**</td>
<td>-.26**</td>
<td>.13</td>
<td>-.14</td>
<td></td>
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<tr>
<td>6. PLOC Control</td>
<td>--</td>
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<td>-.47**</td>
<td>.24**</td>
<td>-.27**</td>
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<tr>
<td>7. PLOC Efficacy</td>
<td>--</td>
<td>-.19*</td>
<td>.26**</td>
<td>-.22*</td>
<td>.14</td>
<td>-.14</td>
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<td>8. PMI</td>
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<td>.03</td>
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<td></td>
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<tr>
<td>9. T1 Problem Severity</td>
<td>--</td>
<td>-.67**</td>
<td>.45**</td>
<td>-.39**</td>
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<tr>
<td>10. T1 Youth Functioning</td>
<td>--</td>
<td>-.34**</td>
<td>.41**</td>
<td></td>
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<td>11. T2 Problem Severity</td>
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<td>-.72**</td>
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<tr>
<td>12. T2 Youth Functioning</td>
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</tbody>
</table>

Note: *p < .05; **p < .01
### Correlations Between All Time 2 Variables

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<th>4</th>
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<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Causality</td>
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<td>.56***</td>
<td>.29**</td>
<td>.74***</td>
<td>.29**</td>
<td>-.004</td>
<td>-.02</td>
<td>.04</td>
</tr>
<tr>
<td>2. Stability</td>
<td>--</td>
<td>.30**</td>
<td>.05</td>
<td>.59***</td>
<td>.29***</td>
<td>.46***</td>
<td>.44***</td>
<td>-.42***</td>
</tr>
<tr>
<td>3. Globality</td>
<td>--</td>
<td>.17</td>
<td>.74**</td>
<td>.28*</td>
<td>.03</td>
<td>.06</td>
<td>.00</td>
<td></td>
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<tr>
<td>4. Control</td>
<td>--</td>
<td>.59***</td>
<td>.01</td>
<td>-.22*</td>
<td>-.22*</td>
<td>.20</td>
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<tr>
<td>5. Overall</td>
<td>--</td>
<td>.36**</td>
<td>.11</td>
<td>.11</td>
<td>-.07</td>
<td></td>
<td></td>
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<tr>
<td>6. PLOC Control</td>
<td>--</td>
<td>.39***</td>
<td>.28**</td>
<td>-.26*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. PLOC Efficacy</td>
<td>--</td>
<td>.34**</td>
<td>-.40***</td>
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<td>8. Problem Severity</td>
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<td>-</td>
<td>.72***</td>
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<td>9. Youth Functioning</td>
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<td>-</td>
<td></td>
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<td></td>
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</tbody>
</table>

Note: *p < .05; **p < .01; ***p < .001

N = 81 for correlations including attributions; N = 86 for correlations including PLOC; N = 120 for correlations between Ohio Scales Problem Severity and Youth Functioning.
Appendix D

Supplementary Statistical Analyses

Additional statistical analyses were conducted using select demographic variables, to examine possible group differences or correlations. First, paired samples t-tests were conducted to examine possible differences on the key variables of Ohio Scales Problem Severity and Youth Functioning scales, Attribution domains, PLOC scores, and PMI scores, based on the gender of the child. The main significant difference between male and female youth was on the Ohio Scales Problem Severity scale. It was found that parents rated females as having more severe behavior (M = 34.82, SD = 16.06), as compared to males (M = 25.62, SD = 17.06), \( t(140) = -3.15, p < .005 \). Next, paired samples t-tests were conducted to examine differences between racial groups on the key variables. Due to the small number of participants within each individual minority group, they were combined into a general Minority group. There were 91 Caucasian participants and 46 Minority participants. T-tests revealed significant differences between Caucasians and Minorities on PLOC Parental Control scores, \( t(138) = .314, p < .005 \), with Caucasian parents reporting feelings of less control (M = 26.81, SD = 7.93), as compared to Minority parents (M = 31.25, SD = 7.87). The final t-tests compared the perceptions of parents whose child in treatment was the first born (1\(^{st}\) born), to parents who had additional children older than the child in treatment (non-1\(^{st}\) born). Among the entire sample, 55 parents had a 1\(^{st}\) born, and 74 parents had non-1\(^{st}\) born in treatment. Other caregivers (e.g. grandmother, aunt, guardian; \( N = 13 \)) were not included in these analyses. It was found that parents of 1\(^{st}\) born children reported higher
feelings of motivation on the PMI (M = 4.66, SD = .38), as compared to parents of non-
1st born children (M = 4.46, SD = .57), \( t(126) = -2.29, p < .05 \).

The next set of supplementary analyses examined the correlations between child
age and the key variables. It was found that the child’s age was significantly associated
with several attribution domains. First, a significant positive correlation was found
between age and the Overall Attribution variable (\( r = .21, p < .05 \)). Further analyses
revealed that positive correlations existed between age and globality (\( r = .27, p < .005 \))
and stability (\( r = .17, p < .05 \)). That is, the older age of the child was associated with
increasing parental perceptions that the child’s behavior problems were global and stable.
Correlational analyses were also conducted between parent age and the main study
variables. A significant positive correlation was found between parent age and PLOC
Parental Control scores (\( r = .17, p < .05 \)). No other significant correlations were found
between parental or child age and the main variables in the current study.
Appendix E

Recruitment Flow Chart

Total Families served by MST during the project: 290

Participants enrolled in the project: 142

- Participants with T1 data and no T2 data: 22
- Participants with complete T1 and T2 data: 87
- Participants with T1 data and T2 Ohio Scales: 120