ABSTRACT

Role of Caregiver Psychopathology, Parenting, and Parenting Competence on Outcomes Following Multisystemic Therapy

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Background: Multisystemic Therapy (MST) is a comprehensive family-based treatment that is well-established for the treatment of youth with significant externalizing behaviors, with several studies examining its mechanisms of change, including parenting behaviors. This study examined the association between parent psychopathology at the start of treatment and child aggressive behaviors at long-term follow-up, and whether perceptions of parenting competence and consistent discipline mediate this association. Methods: Data for this study came from a NIMH-funded effectiveness study that examined a range of bio-psycho-social variables that can be used to examine mechanisms of change in MST. Of the 185 youth recruited for the original study, 114 youth with participating female caregivers were included in this study, with youth age ranging from 12 to 17 ($M$=15.20, $SD$=1.35) and caregiver age ranging from 30 to 72 ($M$=43.22, $SD$=8.95). Results: Using the Preacher and Hayes PROCESS model to run our results, the direct effect of parent psychopathology on long-term outcomes was not significant ($z(107)=1.12$, $p = .2633$). While parent psychopathology and parent incompetence were significantly related ($t(108)=2.97$, $p = .0037$) and the relationship between parent incompetence and consistent discipline was significant ($t(108)=5.48$, $p < .001$), the indirect effects of parent sense-of-competence and consistent discipline between parent psychopathology and youth outcomes were insignificant after controlling for youth age, initial aggression report, SES, and time between assessments. Conclusion: Results showed sense-of-competence and consistency of discipline were non-sequential mediators of relations between parent psychopathology and aggressive outcomes. More research is needed to better understand the complex relationship between sense-of-competence and consistent discipline as mediators of behavior.

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# ROLE OF CAREGIVER PSYCHOPATHOLOGY, PARENTING, AND PARENTING COMPETENCE ON OUTCOMES FOLLOWING MULTISYSTEMIC THERAPY

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# CHAPTER ONE

## Background

### *Introduction*

Multisystemic therapy (MST) is the only well-established family-based treatment for youth with serious offending behavior and one of two probably efficacious family-based treatments for less serious forms of disruptive behavior (McCart & Sheidow, 2017). Studies have shown that MST is related to a decrease in youth substance use, aggression, and delinquent behavior, both short and long-term (Henggeler, 1999; Henggeler & Shaeffer, 2016; Letourneau et al., 2013; Sawyer & Bourdin, 2011; Tan & Fajardo, 2017). Despite demonstrated efficacy and effectiveness, few studies have examined mechanisms of change (Dopp et al., 2017; Sheerin et al., 2021). To date, the study of mechanisms of change in MST have focused on therapist adherence, parenting competence, parent discipline, family relations, and antisocial peer groups (Dekovic et al., 2012; Henggeler et al., 2009; Huey et al., 2000). While results of these studies enhance our understanding of the process by which MST influences youth outcomes, they have yet to provide a more robust understanding of parenting factors that may affect mechanisms of interest. Specifically, studies have yet to examine parenting competence and parenting behaviors as mechanisms of change while considering factors that may affect parenting competence and parenting, namely caregiver psychopathology.

Additionally, research has largely focused on post-treatment outcomes when examining mechanisms of change There is limited research examining the role of parental factors on longer-terms outcomes (Sheerin et al., 2021). The goal of the current study was to address these gaps in the MST outcomes literature by examining the association between caregiver psychopathology at the start of treatment and child aggressive behaviors at long-term follow-up, and whether perceptions of caregiver incompetence and consistent discipline mediate this association.

### *Multisystemic Therapy*

Multisystemic therapy (MST) is an intensive, home-based therapeutic approach that is based on Bronfenbrenner's social-ecological framework, which posits that behavior is influenced directly and indirectly by systems (i.e., child characteristics, family characteristics, peer relationships, school factors, and neighborhood and community characteristics) that interact over time to influence behavior (Bronfenbrenner, 1986). Accordingly, because several systems influence behavior and may serve as risk and protective factors for the development and maintenance of problematic behavior, the goal of MST is to address risk factors that are the main drivers of problem behaviors and simultaneously build protective factors while maintaining an individualistic approach (Henggeler et al., 2009). MST therapists often use parent-based intervention (e.g., parent management training that involves changing discipline practices, challenging parental beliefs about child rearing, child behaviors and child characteristics, and implementing consistent discipline), family-based intervention (e.g., focus on reducing conflict between caretakers that interfere with caring for the youth), school-based interventions, and

interventions at the peer level (e.g., decreasing association with deviant peers and increasing association with prosocial peers).

In the perspective of MST, one of the primary ways to affect change in youth conduct problems is to change parenting behaviors because caregivers can have considerable influence in the systems that impact youth outcomes; it is thus hypothesized that changes in parenting behaviors (e.g., inconsistent discipline) and associated changes in parental beliefs about child rearing are necessary for youth to show a response to treatment. (Henggeler, 1998; Henggeler & Schaeffer, 2016). Consistent with this theoretical framework, research has demonstrated that parenting behaviors and parenting sense-of-competence (Dekovic et al., 2012; Henggeler et al., 2009; Sheerin et al., 2021) are significant mechanisms of change at the end of treatment. However, only one of these studies considers parenting context in a way that impacts changes in parenting behaviors (Dekovic et al., 2012). The majority of studies examine single mediation models. Research that includes additional parent-related factors (i.e., psychopathology) for a more robust examination of mechanisms of change in response to MST is needed.

### *Multisystemic Therapy: Mechanisms of Change*

While there is strong and consistent research demonstrating the effectiveness of MST (McCart & Sheidow, 2017), the extant literature examining mechanisms of change in MST is small. One of the first papers to examine mediators of MST outcomes found caregiver-rated therapist adherence to MST principles was related to reductions in delinquent behavior at the end of treatment, which was mediated by changes in family relations (family cohesion, family functioning, and parent monitoring) and delinquent

peer associations (Huey et al., 2000) in an effectiveness trial. While this study is valuable for understanding mechanisms of change in MST, it does not examine broader parenting factors nor potential caregiver contexts that might influence family relations or parenting behaviors critical for changes in MST. These results were replicated and extended by Henggeler et al. (2009). Henggeler and colleagues found MST was significantly related to a decrease in caregiver concerns about 'bad friends' and 'lax discipline' compared to a treatment as usual condition in an efficacy study of juvenile sexual offenders. Furthermore, results of mediation analyses showed 'bad friends' mediated youth reports of deviant sexual interest/risky behaviors, delinquency, and substance use; and 'lax discipline' mediated deviant sexual interest/risky behaviors and delinquency at 12 months after treatment. Taken together, Huey et al. (2000) and Henggeler et al. (2009), suggest changes in parenting, family factors, and deviant peer affiliation are key mediators of change. This conclusion is strengthened by recent findings examining 10-year outcomes in severe criminal offending (i.e., arrest) among the youth who received MST treatment (Sheerin et al., 2021). However, this research fails to consider parenting factors that may help to explain the process through which parenting behaviors bring about youth outcomes.

To date, only one MST study has examined parenting factors that may help explain the process through which parenting behaviors may impact youth outcomes. Dekovic and colleagues (2012) used sequential mediation analyses to examine parent sense-of-competence and parenting behaviors as mediators of change in youth externalizing behavior in an MST efficacy study. Results of this study showed caregivers in the MST group showed a steeper increase in parent sense-of-competence,

an increase in parent use of positive discipline, an increase in parent monitoring, and decrease in externalizing problems compared to treatment as usual. Interestingly, results did not show a difference in the changes in inept discipline between the MST and treatment as usual groups. This may be due to their operationalization of the variable, which includes concepts such as yelling and physical punishment, other punishments such as withdrawal of love or ignoring, and use of psychological control as reported by adolescents. Mediation results showed the effect of MST on externalizing outcomes was mediated by the positive trajectory of change in parent sense-of-incompetence, which in turn affected positive trajectories of change in positive discipline. A similar pattern of results was revealed for positive trajectories in parent monitoring. The study results provide support for further examination of parenting factors included in the MST framework that may be important in the process of parent behavior change that impacts youth outcomes.

Still, additional parenting factors may be important when considering competence and parenting behavior – parenting factors that have been ignored in mediation studies, namely, caregiver psychopathology. MST research examining caregiver psychopathology as part of studies testing mechanism of change would help clarify whether this factor needs to be directly addressed in treatment rather than considered an indirect target. Thus, the goal of this study was to replicate and extend previous MST studies evaluating mechanisms of change by examining caregiver parenting competence and consistent discipline as mediators of relations between parent psychopathology and youth outcome. This study seeks to replicate Dekovic and colleagues (2012) study, which was conducted in a sample outside of the United States; and extend Huey et al. (2000), Henggeler et al.

(2009), Sheerin et al. (2021) and Dekovic et al., (2012) by considering caregiver psychopathology as a pre-treatment parenting factor that may impact key parenting mechanisms of change following MST treatment.

### *Other Family-and Parenting-Based Treatments: Mechanisms of Change*

Like studies of MST, a review of the literature revealed there is a dearth of research examining mechanisms of change in other family-based treatments. However, this is an active and growing area of research among parenting-based prevention and intervention studies (Fagan & Benedini, 2016; Forehand et al., 2014). For example, only one study has tested parenting and family mechanisms of change in Multidimensional Family Therapy (MDFT; Henderson et al., 2009), which is a family centered treatment for youth substance abuse and antisocial behaviors (Liddle, 2016). Henderson and colleagues (2009) found in a study examining long-term outcomes in adolescent substance use that MDFT was related to more effective parental monitoring, compared to treatment as usual, and parental monitoring was, in turn, related to increased abstinence from substance use (Henderson et al., 2009). A relatively recent review of the literature found more mediation studies among parenting-based prevention and intervention programs (Forehand et al., 2014). Parenting factors have not yet been well examined in the literature, as many of the studies reported in the review were some of the primary studies on parenting behaviors as mediators for their specific treatment. This review found the majority of tests studying discipline supported it as a mediator and called for more examination of the mechanisms of change in intervention studies.

However, in the time since this review, few studies examining mechanisms of change in a parenting-based intervention were published (Day & Sanders, 2017; Ludmer et al., 2017; Weeland et al., 2018). Day and Sanders (2017) conducted a study examining the efficacy of a fully online implementation of a parent training program (the Triple P Parenting program) on children ranging from one to eight years old. They found that post-treatment parent self-efficacy mediates the relation between pre-treatment parent distress (a measure examining depression, anxiety, and stress), and post-treatment negative parenting behaviors. Of the studies that examined youth outcomes, Weeland and colleagues (2018) studied parenting behaviors and their relation to a serotonin-linked polymorphic region in the Incredible Years program (parent-training program for children) in youth four to eight years old. They that found improvements in parenting behaviors to be related to the program at posttreatment, but these did not explain decreases in externalizing behavior problems at a long-term follow up. A study examining a different parent management training examined the role of parent psychopathology in two separate mediation models that tested positive parenting and parenting efficacy as mediators of relations between parent internalizing problems and child behavioral difficulties in a sample of parents with children between the ages of nine and twelve (Ludmer et al., 2017). Results revealed positive parenting fully mediated relations between parent internalizing behavior and child behavioral difficulties, while parenting efficacy only approach significance (Ludmer et al., 2017).

These results are consistent with a study of substance using parents (Burnstein et al., 2012), where relations between parental psychopathology (operationalized as a global severity index of broad psychopathology) and child externalizing behaviors (measured

with the CBCL externalizing behavior subscale) was mediated by family functioning. Uniquely, mediation analyses were significant for paternal and not maternal caregivers. These findings may be due to the sample consisting of a clinical population of substance-using parents, as a review article found that maternal and paternal caregiver psychopathology is related to a variety of youth externalizing behaviors (Connell & Goodman, 2002). Though these constructs have been studied separately, there has yet to be a study examining the sequential mediation of parent psychopathology on parent incompetence and consistent discipline with youth aggressive behaviors.

### *Theoretical Foundation for Current Study*

The theoretical framework of MST purports that caregivers are the primary mechanism of change, where empowering the caregiver to have additional parenting skills and necessary resources leads to a caregiver-led change in parenting that diminishes youth antisocial behaviors (Henggeler, 1998). This theoretical framework provides a conceptual model whereby parenting self-efficacy or competence should precedes parenting behaviors in a hypothesized sequential mediation model. Because the framework for which MST based is does not offer guidance on the directionality of change, ordering the proposed mechanisms of change in this study becomes unclear. However, Bandura's social cognitive theory (Bandura, 1986) may be used to generate a model that proposes parenting competence should be ordered first, followed by parenting behaviors in a sequential mediation model evaluating MST outcomes. The social cognitive theory proposed the idea that learning and acquiring behavior occurs in a social context where the person's cognitions, their behaviors, and the environment influence

their perception of and interaction with the world, with a key component of this theory being self-efficacy (Bandura, 1986). Self-efficacy is the extent to which a person believes they can successfully accomplish a specific task and/or action, which directly informs a person's beliefs of a specific outcome. Thus, one's judgements about their ability to complete a task shape the behaviors surrounding the task and thus directly shape the outcome; for example, someone who feels they can accomplish changing their own oil in their car is much more likely to perform that set of behaviors with the proper outcome (changed oil) than someone who believes they are not adequate at car maintenance and repairs (Bandura, 1997). In this way, one's beliefs about their parenting behaviors (caregiver incompetence) will directly affect their parenting behaviors (use of consistent discipline). However, a major barrier of achieving self-efficacy is psychopathology (Reyno & McGrath, 2006). Thus, expanding upon Bandura's theory (1997), anxiety, depression, and other mental health disorders can significantly impact the development of self-efficacy, leading to a decline in actions that can change outcomes in treatment studies.

In this study, parent sense-of-competence related to parenting is used over self-efficacy. Thus, it is hypothesized that parent psychopathology is related to youth outcomes through the sequential mediation of parent sense-of-competence and consistent discipline. While Bandura defines self-efficacy as the individual's belief in their ability to perform and execute specific behaviors that lead to a goal outcome, parenting self-efficacy and parenting competence are ill-defined constructs in the literature and often used interchangeably. The bulk of the literature operationalizes parenting competence as the ability to perform parenting behaviors (Wittowski et al., 2017), and Bandura's model

reflects this view as self-efficacy building competencies (Bandura, 1997). Furthermore, competence as a construct in the literature is often presented as a 'sense-of-competence,' as it is a self-rated measure, and has been conceptualized as a measure of self-efficacy in mediation models hypothesizing both self-efficacy and competence as mechanisms of change (Dekovic et al., 2012; Ludmer et al., 2017). This study used the Stress Index for Parents of Adolescents (SIPA) to assess self-efficacy/sense-of-competence, which includes a 'competence and guilt' subscale. The inclusion of guilt as a factor makes the measure adjacent to, but not directly, a measure of self-efficacy. Hence, for this study, the proper terminology is not 'self-efficacy' but rather 'sense-of-incompetence,' hereafter referred to as caregiver incompetence. While we do not include a measure of caregiver cognitions about their competencies and abilities as parents (i.e., their self-efficacy), the use of a sense-of-competence measure is more consistent with prior literature, which can be a proxy for, rather than a direct measure of, self-efficacy (Dekovic et al., 2012).

In summary, the hypothesized mediation model for the current study is that the demonstrated effect of pre-treatment levels of caregiver psychopathology on youth aggressive behaviors at long-term follow-up would be sequentially mediated by caregiver sense-of-competence followed by consistent discipline (see Figure 1).

### *Further Evidence of Relations Between Target Variables*

In addition to the mediation studies presented above, studies examining direct relations between caregiver psychopathology and youth outcomes (Connell & Goodman, 2002; Crandall et al., 2016; Essau & de la Torre-Luque, 2021; Muratori et al.,

2015), parent psychopathology and caregiver incompetence (Cutrona & Troutman, 1986; Gondoli & Silverberg, 1997; Gross et al., 1994, Yang et al., 2021), caregiver incompetence and parenting behaviors (Dekovic et al., 2010; Dekovic et al., 2012; Dumka et al., 2010; Loop et al., 2017), and parenting and youth problem behaviors (Cova et al., 2020; Kassing et al., 2018; Muratori et al., 2015; Pugh & Farrell, 2012; Robinson et al., 2015; Rodriguez-Meirinhos et al., 2020) further support the hypothesized model.

*Caregiver Psychopathology and Youth Outcomes*

As previously mentioned, a relatively dated meta-analytic review of studies found maternal and paternal psychopathology was related to youth externalizing behavior, though relations between parental psychopathology and externalizing behavior was strongest for male caregivers (Connell & Goodman, 2002). An interesting novel study examined profiles of parent psychopathology, breaking up psychopathology into multiple categories based on gender (high and low psychopathology and drug use for male caregivers, high and low psychopathology and drug use and a high suicidal behavior category for female caregivers), which found that high psychopathology and drug use in either male or female caregivers predicted youth drug use (Essau & de la Torre-Luque, 2021). Consistent with this research, Brennan and colleagues (2002) demonstrated that maternal and paternal depression had an additive effect on adolescent externalizing behaviors. These findings are consistent with research examining relations between parent psychopathology and outcomes following treatment. Specifically, Muratori and colleagues (2015) found that maternal depression predicted less change in child aggression following parent training for the treatment of their child's disruptive

behavior disorder. Additionally, Crandall and colleagues (2016) found that in a longitudinal follow along study, maternal report of family functioning mediated relations between poor maternal emotion regulation and adolescent aggression and maternal report of indulgent parenting mediated relations between poor maternal emotion regulation and adolescent aggression. In other words, maternal difficulties with emotion regulation during their child's early adolescence was related to more maladaptive family functioning and parenting, which, in turn, was related to problematic behaviors five years later.

Some research shows that the effects of parent psychopathology on outcome differs by parent gender. For example, Burstein and colleagues (2012) found that maternal psychopathology was related to adolescent internalizing symptoms and substance use behaviors, while relations between parental psychopathology was related to youth externalizing behavior only through its association with paternal ratings of family functioning. Other research has shown differential patterns of parent psychopathology and outcome by parent gender among those with comorbid substance use disorder and mental illness (defined as a broad set of behaviors including those related to mood disorders, anxiety disorders, psychotic symptoms, eating disorders, adaptive disorder, and intermittent-explosive disorder). Specifically, comorbid substance use disorder and mental illness in mothers was significantly associated with adolescent substance use, while comorbid substance use disorder and mental illness in fathers was not related to adolescent substance use after controlling for child and paternal characteristics (Ali et al., 2016). Given mixed results in the literature about the impact of parent psychopathology on outcome by parent gender, only female caregivers were included in the current study.

*Caregiver Psychopathology and Caregiver Incompetence*

The association between caregiver psychopathology and caregiver incompetence is not well studied. The reasons for this are two-fold. One, competency or it's closely related term, self-efficacy, is typically studied among parents of young children. Two, as stated above, the terms self-efficacy and competence are conflated in the literature. To this end, there is a demonstrated relationship between caregiver psychopathology and caregiver self-efficacy (Cutrona & Troutman, 1986; Gondoli & Silverberg, 1997; Gross et al., 1994). In a study conducted on infants and their mothers assessing the influences on the development of postpartum depression, researchers found that parenting efficacy mediated the association between difficult infant temperament and postpartum depression (Cutrona & Troutman, 1986). Parents of toddlers seem to display similar patterns, with higher rates of depression associated with lower rates of self-efficacy, which is related to the caregiver's rankings of temperament (Gross et al., 1994). In addition to these studies, a recent scoping review of this research examining factors related to parenting self-efficacy found that maternal depression and anxiety were the most commonly cited caregiver psychopathology variables studied in relation to parenting self-efficacy, with multiple studies citing a relation between the two variables (Gordo et al., 2018; Jover et al., 2004; Teti & Gelfand, 1991, Yang et al., 2021). In the only study found examining mediation in adolescence, a nonclinical sample examining mothers and their adolescents, maternal emotional distress (including feelings of depression, anxiety, and overwhelmed feelings) and maternal responsiveness (acceptance of adolescent and promoting autonomy within the relationship) were mediated by reports on parent efficacy (Gondoli & Silverberg, 1997). The current study seeks to build upon this literature by examining

parent sense-of-competence as an important mediator of the association between caregiver psychopathology and adolescent outcomes.

*Caregiver Competence and Parenting Behavior*

Although sparse, research has shown that parent sense-of-competence is strongly associated with parenting behaviors and with youth behavior outcomes. In an adolescent sample, maternal sense-of-competence was related to supportive parenting (Dekovic et al., 2010). In a separate intervention program for youth ages 7-13, parenting efficacy was associated with a decrease in externalizing behavior (Loop et al., 2017). Furthermore, in an MST study with adolescents, sense-of-competence predicted changes in positive discipline, which in turn predicted decreases in externalizing behaviors (Dekovic et al., 2012). Finally, parenting self-efficacy preceded positive parenting behaviors, and decreases in adolescent conduct problems in a sample of Mexican-American families, indicating that parent self-efficacy is related to adolescent behavior across cultures (Dumka et al., 2010).

*Parenting and Youth Problem Behaviors*

Several parenting behaviors have been related to youth aggression, delinquency, externalizing behavior, and substance use, including parental monitoring (Robinson et al., 2015; Rodriguez-Meirinhos et al., 2020), critical, harsh or ineffective parenting (Beauchine et al., 2005), reductions in negative parenting (Foregatch & Degarmo, 1999; Rimestead et al., 2020), positive parenting (Bjorknes et al., 2012), consistent discipline (Cova et al., 2020; Kassing et al., 2018; Muratori et al., 2015), and broader

parenting practices and family functioning (Pugh & Farrell, 2012). Given previous mediation studies, the current study will examine consistent discipline which has been implicated as a mechanism of change in MST (Dekovic et al., 2012; Henggeler et al., 2009) and as a mediator of the association between maternal distress and child aggression (Barry et al., 2009). For the current study, consistent discipline was chosen as a mediating variable because one of the goals of this study was to maintain generalizability of the findings by remaining consistent with previous MST mediation studies, while expanding prior research by include parent psychopathology as a predictor variable.

### *Current Study*

While there is a vast literature examining the efficacy and effectiveness of MST (Henggeler et al., 1999; Letourneau et al., 2009; Sawyer & Bourdin, 2011), there is a dearth of research evaluating mechanisms of change for the therapy. Among those that do exist, the examination of parent factors that may impact parenting (a key mediator variable) has not been considered (e.g., parent psychopathology) while also considering parenting factors that may be important in the process of parenting change. The purpose of this study was to replicate previous research by examining incompetence and discipline as mediators of MST outcome (aggression specifically) and to extend previous research by evaluating these constructs as mediators of relations between parent psychopathology at the start of treatment and long-term youth outcomes.

# CHAPTER TWO

## Methods and Measures

### *Participants*

Data for this secondary data analysis came from a five-year effectiveness study that examined a wide range of bio-psycho-social variables that can be used to examine mechanisms of change in MST. One hundred and eighty-five youth-caregiver dyads were enrolled in the original study. The current sample excluded male caregivers (N = 20) and families with incomplete data or changes in caregivers (N = 51) at all time points of interest, start of treatment (T1), end of treatment (T4), and six-month follow-up after end of treatment (T5). Thus, the current sample included 114 youth (61.4% male) ages 12 to 17 *(M* = 15.16, *SD* = 1.36) and female caregivers ages 30-71 (*M* = 42.81, *SD* = 8.52). The youth were 48% white, 26.5% Hispanic/Latinx, 21.1% Black/African American, and all others identified as more than one race, American Indian/Alaskan Native, Asian, or Native Hawaiian/Pacific Islander. The majority of caregivers identified as white (52%), 24.5% identified as Hispanic/Latinx, 21.1% identified as Black/African American, and the other 3% identified as more than one race, American Indian/Alaskan Native, Native Hawaiian/Pacific Islander, or other. Socioeconomic status (SES) was calculated using the widely used Hollingshead SES scale (Hollingshead, 1975), which considers parental education and occupation. The mean Hollingshead score was 30.13 (*SD* = 11.03) out of 100, indicating most families fell in the lower middle-class category.

Youth were included in the study if they (1) were 12-17 years of age at the onset of the study, (2) were referred for MST services for substance use, property offense, crime against another person, conduct disorder, or significant behavioral problems, (3) had a willing caregiver that would participate in MST, and (4) were living in the caregiver's home for at least one month prior to MST treatment with no immediate plans for placement elsewhere. Informed consent was obtained from the caregiver, and consent or assent was obtained from the youth participant. The study was originally approved by the Human Subjects Institutional Review Boards at Emory University, the University of Colorado, and the Medical University of South Carolina. Approval of the secondary analyses for this study was granted by Baylor University.

### *Design and Procedures*

As part of the effectiveness trial, youth, family, and therapist variables were examined at four assessment timepoints: early in treatment (T1), mid-treatment (T2 and T3), immediately post-treatment (T4), and approximately 6 months after treatment (T5). For the purposes of the current study, only T1, T4, and T5 time periods were examined: parent psychopathology was measured at T1, the mediators (parental competence and inconsistent discipline) were measured at T4, and child aggressive behavior was measured at follow-up, T5.

Families were referred to the study upon enrolling in one of four licensed MST provider agencies in Denver Colorado. An initial family interview was then scheduled in the home at the family's earliest convenience. During this visit, an average of 19.8 (*SD*=10.83) days after referral, the caregiver and youth received detailed information

about the study and provided informed consent and assent. If time permitted, caregivers and youth also provided baseline (T1) data, which included measures of psychopathology, parenting stress and competence, parenting behaviors including discipline, and reports of youth internalizing symptoms and delinquent and aggressive behaviors. For the purposes of this study, only caregiver report of psychopathology was analyzed. These procedures were repeated at T4, which was approximately four months after the first assessment ($M = 4.29$, $SD = 1.96$) and at follow up (T5), which was approximately six months after treatment discharge, which is approximately nine months after the first assessment ($M = 9.56$, $SD = 1.80$). For the purposes of this study, caregiver reports of parental discipline style and sense-of-competence at T4 and youth aggressive behaviors at T5 were used in analyses. After completing the procedures, families were debriefed and given compensated $75 for their time.

All participants were treated with MST. Multisystemic therapy is a highly efficacious intervention for treating antisocial behaviors (Henggeler et al., 2012). Providers are usually holders of master's or advanced bachelor's degrees. Families in this study were treated by 52 therapists with an average caseload of 3.52 families. MST is typically provided in the home environment to simulate the natural ecology of the youth with the immediate goal of addressing individual, family, peer, school, and community factors that either directly or indirectly affect the youth's behavior. A primary aim of MST is to develop effective parenting behaviors and to develop parenting competencies and address barriers in the development of these competencies (Henggeler et al., 2012).

## *Measures*

### *Caregiver Psychopathology*

Caregiver psychopathology was measured using the Brief Symptom Inventory (BSI; Deratogis, 1993), which is a self-report inventory that was developed as a short version of the SCL-90-R (Deratogis, 1993). The BSI is a 53 item measure that includes the subscales of somatization (i.e. 'How much are you bothered by: nausea or upset stomach), obsessive-compulsive (i.e., 'How much are you bothered by: Having to check and double-check what you do), interpersonal sensitivity (i.e. 'How much are you bothered by: Feeling very self-conscious with others), depression (i.e. 'How much are you bothered by: Feeling blue), anxiety (i.e. 'How much are you bothered by: Feeling tense or keyed up), hostility (i.e. 'How much are you bothered by: temper outbursts you cannot control"), phobic anxiety (i.e., 'How much are you bothered by: Having to avoid certain things, places, or activities because they frighten you), paranoid ideation (i.e., 'How much are you bothered by: Feeling that most people cannot be trusted), and psychoticism (i.e. 'How much are you bothered by: ' Having urges to beat, injure, or harm someone). The measure assesses symptoms on a 5-point scale from 0 (not at all) to 4 (extremely). Thus, as total scores increase, symptoms of psychopathology also increase. The BSI is a well-validated measure, with adequate convergent validity and test-retest reliability (Deratogis, 1993). The current study used a computerized version of the BSI rather than the original paper-and-pencil measure and was adapted to reflect symptoms over 30 days instead of the original 7 days with a Spanish adaptation if necessary.

This measure is often used in clinical contexts for the assessment of distress, with the Global Severity Index (GSI) serving as a good indicator of overall psychosocial

distress (Derogatis, 1983). Thus, for the purposes of this study, the GSI was calculated by averaging all the items. After tests of parametric assumptions revealed a skew in the BSI scores, raw scores were converted to *T*- scores and used as a continuous measure of parent psychopathology. Coefficient alpha for the BSI at T1 was 0.974. Please see Appendix A for a copy of this measure.

*Parenting Incompetence*

Parenting incompetence was measured using the Incompetence/Guilt Subscale of the Stress Index for Parents of Adolescents (SIPA; Sheras et al., 1998). The Incompetence/Guilt Subscale includes nine items that measure a parent's confidence in the ability to effectively cope with their adolescent's misbehavior and how parents feel they are doing with the task of parenting their child. Items are rated on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Low scores represent perception of a greater sense of parenting competence and high scores represent perceptions of a greater sense of incompetence. Previous research shows that this subscale demonstrates good test-retest reliability, with a correlation coefficient of .83 (Sheras et al., 1998). The measure was administrated using a computerized format instead of paper and pencil. The nine questions were averaged to provide a continuous measure. Coefficient alpha for SIPA at T4 was 0.862. This is consistent with prior research that reported a coefficient alpha of 0.82 (Sheras et al., 1998). Please see Appendix B for a copy of this measure.

*Consistent Discipline*

The inconsistent discipline subscale of the Alabama Parenting Questionnaire (APQ; Frick, 1991) was used to measure parental discipline. The APQ is a 42-item measure and includes the most important parts of parental practices related to disruptive behavior problems in children: parental involvement, monitoring/supervision, use of positive parenting techniques, inconsistent discipline, and harsh discipline. In the present study, only caregiver report of inconsistent discipline was used. Previous research demonstrated that this subscale shows high test-retest reliability across multiple studies (Dadds et al., 2003; Hawes & Dadds, 2006; Shelton et al., 1996). Additionally, Essau and colleagues (2006) found that the APQ had high factorial construct validity. This subscale consists of six items that measure the consistency of parenting behaviors (i.e., "You threaten to punish your child and then do not actually punish him/her") over the past 30 days. The average of the six questions was computed to provide a continuous measure. Higher scores indicate more consistent discipline. Cronbach's alpha at T4 for caregivers was 0.76. This value is consistent with other reports of other APQ internal consistency studies with school children (Essau et al., 2006). Please see Appendix C for a copy of this measure.

*Youth Aggressive Behavior*

Youth aggressive behaviors was measured using the Child Behavior Checklist (CBCL; Achenbach, 1991), which is one of the most well-validated parent-report measures of child behavior functioning (Achenbach, 1991; Achenbach & Edelbrock, 1983; Achenbach & Rescorla, 2001). The CBCL consists of 113 items designed to assess

behavioral and emotional problems in youth ages 4-18. Broadly, the CBCL measures symptoms of Internalizing Problems (e.g., depression and anxiety), Externalizing Problems (e.g., aggression, conduct problems, attention-deficit/hyperactivity symptoms, and delinquency), and Total Behavior Problems (i.e., total scores on internalizing and externalizing problems). Mean test-retest reliability correlations for subscale scores ranged from .70 - .95, with all correlations being significant at $p < .01$ (Achenbach, 1991). This study used the Aggression subscales of the Externalizing Problems domain, which includes 20 items (e.g., i.e. In the last 30 days…Cruelty, bullying, or meanness to others; In the last 30 days...Argues a lot)). Responses to items ranged from zero to two: "0-Not True", "1-Sometimes True," and "2-Very True or Often True." Caregivers were asked to describe behaviors of the youth that were occurring at the time of the study or within the past 30 days. Please see Appendix D for a copy of the measure.

Due to significant skew, the raw subscale scores were converted to *T*-scores using gender-based norms and a dichotomous variable based on propensity to engage in aggressive behaviors was created. Youth with a T-score of 67 and below were considered to have a low propensity to engage in aggressive behavior at follow up (coded as 0; n= 91) and youth with a T-score of 67 and above were considered to have a high propensity to engage in aggressive behavior at follow-up (coded as 1; n= 23). The coefficient alpha for this was 0.935 at T5.

# CHAPTER THREE

## Data Analysis and Results

### *Data Analysis Procedure*

The primary aim of the study was to examine the potential sequential mediation of T4 caregiver incompetence (M1) and T4 consistent discipline (M2) for relations between T1 caregiver psychopathology (X) and T5 youth propensity to engage in aggressive behaviors (Y) (See Figure 1). First, bivariate correlations were used to examine associations between the independent variables and dependent variable. Secondly, model six of the PROCESS statistical procedure and software was used (Hayes, 2017) to test for sequential mediation. For this model, caregiver psychopathology was entered as the X variable, propensity to engage in aggressive behavior was entered as the Y variable, and the mediators were entered in the same block with caregiver sense of competence entered first and consistent discipline entered second. The approach provides results for three regression models to test the sequential mediation. Since the outcome variable in this study was dichotomized, the estimation of propensity to engage in aggressive behavior was conducted using logistic regression, modeling the probability of youth having a T-score that falls in the at-risk or clinically significant range (coded as 1). Thus, regression coefficients for the model of Y are logistic regression coefficients. When the outcome variable is dichotomous, the indirect effects of X on Y is the product of the effect of X on the mediator(s) and the effect of the mediator(s) on Y, controlling for X. Finally, because the regression coefficient for X in a model with a dichotomous Y is not equal to the sum

of the direct and indirect effects of X, total effects is not available for the current analyses. Indirect (or mediating) effects were conducted using the bootstrap method. Boostrapping involves examining a point of estimate in a mediating variable to be zero within a 95% bias corrected confidence interval, meaning a variable with a no-point estimate (zero) within the bias range is statistically significant (Hayes, 2017). In testing for the serial-mediation, 5,000 bootstrap samples were used, with the level of confidence set at 95 (significance level of .05). The analyses were conducted in IBM SPSS 27.0 with PROCESS macros from http://www.afhayes.com/ (Hayes, 2012).

### *Confounds and Statistical Controls*

Youth race, gender, age, and socioeconomic status (SES) were all considered as possible confounding variables given their strong association with youth aggressive behavior (Ludmer et al., 2017). In the end, only youth age and SES were included as statistical controls in all analyses. Participant race was excluded because correlation results showed race was not significantly related to aggression in this sample ($r(114) = .18, p = .096$). Gender was excluded as a control because differences in youth aggression scores are accounted for when raw scores for the aggression variable were transformed to T-scores using gender-based norms. Finally, because of the longitudinal nature of the data, time between T1 and T5 as well as baseline assessment of aggression was included as a statistical control in all analyses.

## *Results*

### *Descriptive Statistics*

Descriptive statistics of the sample and the main variables used in analyses are reported in Table 1. Bivariate correlation analyses were conducted to determine the relationships between target variables, reported in Table 2. Results of the correlations analyses indicated that caregiver psychopathology was positively related to caregiver incompetence ($r(114) = .32$, $p = .001$) such that as caregiver psychopathology increased levels of caregiver sense of parenting incompetence also increased. Caregiver incompetence and consistent discipline were negatively related ($r(114) = -.53$, $p < .001$) such that as caregiver sense of incompetence increased report of the consistent use of discipline decreased. Youth aggressive behavior was positively related to caregiver psychopathology ($r(114) = .22$, $p = .018$) such that as caregiver psychopathology increased so did the propensity for youth to engage in aggressive behavior. Results were not statistically significant for relations between caregiver incompetence and the propensity for youth to engage in aggressive behavior ($r(114) = .16$, $p = .091$), or consistent discipline and the propensity for youth to engage in aggressive behavior ($r(114) = -.16$, $p = .085$), though results approached significance.

### *Hypothesis Testing*

Through the PROCESS procedures, regression-based analyses and indirect effects were calculated (see Table 2, Figure 2). Due to potential distribution related Type I

errors, non-standardized Betas are calculated, while bootstrapping utilizes re-sampling and distribution problems can be controlled for this way (Hayes, 2017).

Three regression models were tested to investigate whether the association between caregiver psychopathology at the start of treatment and propensity for aggression at follow up is sequentially mediated by caregiver sense-of-incompetence and consistent discipline at the end of treatment. In the first ordinary least squares regression model, caregiver psychopathology at the start of treatment significantly predicted caregiver report of incompetence at the end of treatment (B = .02, *SE* = .01, *p* =.004, 95% CI = .006, .029).

In the second ordinary least squares regression model, which included caregiver sense of incompetence and caregiver psychopathology, caregiver psychopathology was not independently associated with consistent discipline, (B = -.005, *SE* = .005, *p* =.297, 95% CI = -.014, .004), but caregiver sense-of-incompetence at the end of treatment was significantly associated with their consistent discipline at the end of treatment (B = -.40, *SE* = .07, *p* < .001; 95% CI = -.545, -.256).

In the third logistic regression model, which included caregiver sense of incompetence, consistent discipline, and caregiver psychopathology as predictors of the propensity to engage in aggressive behavior, neither caregiver psychopathology (B = .036, *SE* = .032, *p* = .236, 95% CI = -.027; .010), caregiver sense-of-incompetence (B = .29, *SE* = 49, *p* = .556; 95% CI = -.676, -.010), nor consistent discipline (B = -.06, *SE* = .53, *p* = .905, 95% CI = -1.101, .974), was significantly independently associated with youth propensity to engage in aggressive behavior at follow-up.

Finally, the bootstrap confidence intervals derived from 5000 samples indicated that the indirect effect coefficient for relations between caregiver psychopathology and propensity to engage in aggressive behavior, though caregiver sense-of-incompetence and consistent discipline was not significant, (B = .0004, *SE* = .03, 95% CI = -.015, .013), which did not support the hypothesis that the relation between caregiver psychopathology and propensity for aggression is sequentially mediated by caregiver sense-of-incompetence and consistent discipline. Further, the bootstrap confidence intervals derived from 5000 samples indicated that an alternative model whereby the mediators in this study operate jointly at the same stage, such that there are several indirect effects linking caregiver psychopathology and propensity to engage in aggressive behavior, were not significant. Specifically, neither the indirect effect coefficient for relations between caregiver psychopathology and propensity to engage in aggressive behavior though caregiver sense-of-incompetence (B = .005, *SE* = .290, 95% CI = -.120, .046) nor the indirect effect coefficient for relations between caregiver psychopathology and propensity to engage in aggressive behavior through consistent discipline (B = .0003, *SE* = .015, 95% CI = -.014, .013) were significant.

Overall, then, the results show that caregiver psychopathology was related to caregiver incompetence (B = .02, SE = .01, p =.004, 95% CI = .006, .029) and caregiver incompetence was related to their consistent discipline (B = -.40, *SE* = .07, $p < .001$; 95% CI = -.545, -.256). However, no other associations were found to be significant in our sample. See Figure 2 for a model summary.

# CHAPTER 4

## Discussion

The present study expanded upon previous work examining mediators in MST by examining the role of caregiver incompetence and consistent discipline in the relation between caregiver psychopathology and youth aggressive behaviors. To accomplish this, previously identified mediators (parent sense-of-competence and consistent discipline; DeKovic et al., 2012) were assessed in a model examining caregiver psychology and long-term follow up of the propensity to engage in aggressive behaviors to expand upon the current literature's lack of studies examining parenting factors in mediation models. As expected, caregiver psychopathology at the start of treatment was positively related to sense of incompetence at the end of treatment. Further, relations between parent incompetence and consistent discipline at the end of treatment demonstrated a strong positive relationship. Our model demonstrated no other significant results: caregiver psychopathology at the start of treatment was not related to consistent discipline consistent discipline at the end of treatment, and caregiver sense of incompetence and consistent discipline were not related to propensity to engage in aggressive behavior. Finally, contrary to the hypothesis, caregiver psychopathology at the start of treatment was not related to the propensity for youth aggressive behaviors through caregiver sense of incompetence and consistent discipline at follow-up.

Results showing significant relations between caregiver psychopathology and sense of incompetence is consistent with the literature supporting their association (Cutrona & Troutman, 1986; Gondoli & Silverberg, 1997). However, the small effect size

in the current study indicates that relations between these variables was minimal. The small effect size may be due to our study design. When considering that parental competence is directly and indirectly targeted by MST (Henggeler, 1998), it is possible that caregivers increased significantly in their level of competence, thereby weakening associations between caregiver psychopathology and competence. Future research should further dissect the relation between psychopathology and competence at cross-sectional vs longitudinal time points to better understand potential differences in the association at different time points.

Results showing a significant negative relation between caregiver incompetence and caregiver consistent discipline is also consistent with prior studies showing that sense-of-competence directly predicts parenting behaviors (Dekovic et al., 2010; Dekovic et al, 2012; Dumka et al., 2010). Caregiver incompetence was not related to propensity for aggressive behaviors, which is not consistent with most of the literature on this topic (Loop et al., 2017). However, since the model purported a sequential mediation, incompetence and youth behaviors do not have to be directly related so long as it has significant associations with both caregiver psychopathology and parenting behaviors, which it does in our sample. Significant relations are also supported by Bandura's social cognitive theory, which was applied to parenting contexts for our study, which suggests that a parent's sense-of-competence may influence a caregiver's effort and persistence in their parenting behaviors (Bandura, 1997; Dekovic et al., 2012). While our model provided results that are mostly consistent with the existing literature on self-efficacy and competence in parenting, utilizing a self-efficacy variable that does not include perceptions of guilt may be a more accurate measure of the relations between the

variables in the model. Future studies should examine the model in the context of self-efficacy or other sense-of-competence variables that might align more closely with Bandura's theory and the extant literature.

Results from this study examining consistent discipline were also inconsistent with prior research. First, results showed that consistent discipline at the end of treatment was not significantly related to the propensity for aggression at follow-up. This is inconsistent with research showing relations between parenting practices and youth aggressive or externalizing behaviors (Barry et al., 2009; Bjørknes et al., 2012; Chamberlain et al., 2008; Forehand et al., 2014; Muratori et al., 2015), even in the context of long-term outcomes (Stanger et al., 2015). However, a recent study examining the Incredible Years parenting program did find that even though their parent training improved parenting behavior, these effects did not explain the decreases found in child externalizing behavior (Weeland et al., 2018). A response article to this paper examined the idea that while heterogeneity exists within the parenting behaviors as mediators in the literature, some of this can be moderated through the amount of treatment received, the levels of parenting problems at intake, the high-risk or clinical nature of samples used, how the study defines parenting, and whether child training is included with parent training (Beauchaine & Slep, 2018). Thus, one of these factors may explain why our results are inconsistent with the broader literature on parenting behaviors and youth outcomes. Additionally, caregiver incompetence, consistent discipline, and propensity to engage in aggressive behaviors may be most strongly related when assessed at the same time point, as the relationship is known to be significant when assessed at post-treatment

(Dekovic et al., 2012). Future research studies should consider the proposed mediation model in which youth outcomes are assessed at post-treatment.

The results may be inconsistent with prior research because of the chosen parenting variable. To date, only one study has found a relation between 'lax' discipline and long-term outcomes in MST (Henggeler et al., 2009), which used a youth self-report measure of discipline rather than caregiver reported discipline. Because our findings were only related to a caregiver report of discipline, future studies should consider other reports (youth, therapist) as examined in prior studies.

Third, results also demonstrated relations between caregiver psychopathology and propensity for youth aggression was not significant. These findings are inconsistent with the extant literature, as relations between caregiver psychopathology and outcomes is well established (Connell & Goodman, 2002; Essau & de la Torre-Luque, 2021; Letourneau et al., 2019). The potential reasons for the inconsistent results may be considered through three separate lenses: examining the broader construct of psychopathology rather than a subscale, the caregiver gender in relation to psychopathology, and effects of treatment. One, caregiver psychopathology in the current study was operationalized to include a broad set of mental health symptoms. Much of the literature has considered narrower constructs. For example, prior research has largely considered maternal depression (Yang et al., 2021) or parental substance use (Ali et al., 2016) rather than psychopathology more broadly like in the current study. Narrowing the type of psychopathology may lead to a better understanding of which diagnostic profiles are most predictive of youth outcomes generally and through sequential mediation. Two, the current sample was narrowed to include female caregivers only. This may have

limited the direct effects, as paternal vs maternal caregivers tend to affect different aspects of youth behavior. Prior research suggests that maternal psychopathology is more strongly associated with youth internalizing behaviors and paternal psychopathology is more strongly associated with externalizing behaviors (Burnstein et al., 2006; Connell & Goodman 2002). The null results for relations between psychopathology among female caregivers and propensity for aggressive behavior is consistent with the results of Burnstein et al. (2012), which found paternal psychopathology and youth externalizing behaviors was related, but maternal psychopathology was only related to youth internalizing and substance use, rather than externalizing, behavior. It should be noted that the parents in this the Burnstein et al. (2012) study were in treatment for a substance use disorder, which may significantly alter family dynamics and treatment goals (Burnstein et al., 2012). Future studies should consider the current hypothesized mediation model and examine the role of paternal psychopathology in this model. Three, relations between caregiver psychopathology and outcome may have been weakened due to the treatment context. Because of the treatment model of MST, issues typically related to parent psychopathology (e.g., stress, self-efficacy, self-confidence) can be reduced or resolved due to treatment and so relations between psychopathology and outcome are reduced.

Given the pattern of results for direct relations between the study variables, it is not surprising that the overall mediation model was not significant. However, the non-significance of the model is worth examining. Our results suggest that caregiver psychopathology is important to sense-of-incompetence, indicating that helping to alleviate parent psychopathology may help parents feel more competent in their

parenting. This sense-of-incompetence is also directly effects the consistency of discipline, so empowering caregivers to feel more competent may increase their consistency in parenting behaviors, which is consistent with Bandura's social cognitive theory (1986). These results indicate that caregiver psychopathology and sense-of-incompetence should be considered in the broader therapeutic context as key factors related to changing parenting behaviors. However, our results that indicate a non-relationship between caregiver variables (psychopathology, incompetence, consistent discipline) and youth aggressive outcomes are also important. These results tentatively display the idea that parenting factors should be considered in treatment, but may not be as closely related to youth aggressive outcomes in treatment studies as previously thought. Aggressive outcomes may have different factors and parenting behaviors associated than those chosen in our model, which should be examined in further detail. Future research is needed to discern whether other constructs of caregiver psychopathology, incompetence, consistent discipline, or youth propensity to engage in aggressive behaviors may be related. These results may be consequential in determining the effect of more specific caregiver psychopathologies and their effect on youth outcomes.

### *Limitations and Strengths*

Results from this study should be considered within the context of three limitations. One limitation of the study was the use of a dichotomous variable for youth aggressive behaviors. Dichotomizing variables reduces variability within the data, which reduces power, potentially by as much as one-third (Altman & Royston, 2006). The

variable was also then unevenly split (with higher propensity to aggressive behaviors being N = 23 out of 114). A second limitation of the current study was the operationalization of the caregiver incompetence variable. This variable included questions related to guilt. Previous students have examined competence using measures of parenting stress such as the Parent Stress Index (PSI; Abidin, 1983) which has a competence subscale often used in competence and efficacy studies (Jones & Prinz, 2005). These measures consist of questions related to parenting competence which do not include guilt and thus are conceptually closer to self-efficacy as proposed by Bandura's conception of efficacy (Bandura, 1997). For both variables, future research should consider a continuous aggressive behavior variable and a scale that more accurately reflects self-efficacy. Third, the sample size included in the study limits the complexity of mediation chains and models, as the current sample size is not powered to include tertiary mediators or moderators of the proposed sequential mediation model. A more advanced model or sequence of mediators may be needed to best understand the role of the full context of parenting on youth outcomes.

While this study has some limitations, it also has some strengths. One, the study is one of the first to re-examine the relationship between caregiver psychopathology and caregiver incompetence in adolescents in a treatment setting (Gondoli & Silverman, 1997). Secondly, the study examines the model within the context of a well-established treatment with known mediators (Henggeler et al., 2009). Finally, the study examines a longitudinal model of mediation that includes pre-treatment parenting factors in a novel way.

### *Summary*

Overall, the study results did not support the hypothesized model whereby relations between caregiver psychopathology and youth aggressive behavior at follow up was sequentially mediated by caregiver sense of incompetence and parenting behaviors. As more information is discovered about the 'black box' surrounding the mediators of MST treatment, this study presents an important step forward by conducting a novel longitudinal mediation and furthering our understanding of what predicts—and what does not predict—long-term behavioral outcomes in Multisystemic Therapy.

# APPENDICES

APPENDIX A

BRIEF SYMPTOM INVENTORY--Caregiver Report

Now we are going to ask you some questions about yourself. On the following pages are a list of problems and complaints that people sometimes have. Please read each one carefully. After you have done so, choose the number that best describes HOW MUCH THAT PROBLEM HAS BOTHERED OR DISTRESSED YOU OVER THE LAST 30 DAYS INCLUDING TODAY (Remember the calendar we created together). Choose only one number. For example, let's say you were given the item "Pain" in my big toe; and the scale:

0 Not at all
1 A little bit
2 Moderately
3 Quite a bit
4 Extremely

You would circle the number 3 if a pain in your big toe had bothered you quite a bit over the past 30 days. (Please remember, your answers are strictly confidential.)

How much are you bothered by:

1. Nervousness or shakiness inside
   0 Not at all
   1 A little bit
   2 Moderately
   3 Quite a bit
   4 Extremely

2. Faintness or dizziness
   0 Not at all
   1 A little bit
   2 Moderately
   3 Quite a bit
   4 Extremely

3. The idea that someone else can control your thoughts
   0 Not at all
   1 A little bit
   2 Moderately
   3 Quite a bit
   4 Extremely

4. Feeling others are to blame for most of your troubles
   0 Not at all
   1 A little bit
   2 Moderately
   3 Quite a bit
   4 Extremely

5. Trouble remembering things
   0 Not at all
   1 A little bit
   2 Moderately
   3 Quite a bit
   4 Extremely

6. Feeling easily annoyed or irritated
   0 Not at all
   1 A little bit
   2 Moderately
   3 Quite a bit
   4 Extremely

7. Pains in heart or chest
   0 Not at all
   1 A little bit
   2 Moderately
   3 Quite a bit
   4 Extremely

8. Feeling afraid in open spaces or on the street
   0 Not at all
   1 A little bit
   2 Moderately
   3 Quite a bit
   4 Extremely

9. Thoughts of ending your life
   0 Not at all
   1 A little bit
   2 Moderately

3 Quite a bit
4 Extremely

10. Feeling that most people cannot be trusted
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

11. Poor appetite
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

12. Suddenly scared for no reason
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

13. Temper outbursts that you could not control
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

14. Feeling lonely even when you are with people
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

15. Feeling blocked in getting things done
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

16. Feeling lonely

0 Not at all
1 A little bit
2 Moderately
3 Quite a bit
4 Extremely

17. Feeling blue
0 Not at all
1 A little bit
2 Moderately
3 Quite a bit
4 Extremely

18. Feeling no interest in things
0 Not at all
1 A little bit
2 Moderately
3 Quite a bit
4 Extremely

19. Feeling fearful
0 Not at all
1 A little bit
2 Moderately
3 Quite a bit
4 Extremely

20. Your feelings being easily hurt
0 Not at all
1 A little bit
2 Moderately
3 Quite a bit
4 Extremely

21. Feeling that people are unfriendly or dislike you
0 Not at all
1 A little bit
2 Moderately
3 Quite a bit
4 Extremely

22. Feeling inferior to others
0 Not at all
1 A little bit
2 Moderately
3 Quite a bit

4 Extremely

23. Nausea or upset stomach
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

24. Feeling that you are watched or talked about by others
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

25. Trouble falling asleep
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

26. Having to check and double-check what you do
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

27. Difficulty making decisions
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

28. Feeling afraid to travel on buses, subways, or trains
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

29. Trouble getting your breath
    0 Not at all

1 A little bit
2 Moderately
3 Quite a bit
4 Extremely

30. Hot or cold spells
0 Not at all
1 A little bit
2 Moderately
3 Quite a bit
4 Extremely

31. Having to avoid certain things, places, or activities because they frighten you
0 Not at all
1 A little bit
2 Moderately
3 Quite a bit
4 Extremely

32. Your mind going blank
0 Not at all
1 A little bit
2 Moderately
3 Quite a bit
4 Extremely

33. Numbness or tingling in parts of your body
0 Not at all
1 A little bit
2 Moderately
3 Quite a bit
4 Extremely

34. The idea that you should be punished for your sins
0 Not at all
1 A little bit
2 Moderately
3 Quite a bit
4 Extremely

35. Feeling hopeless about the future
0 Not at all
1 A little bit
2 Moderately
3 Quite a bit
4 Extremely

36. Trouble concentrating
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

37. Feeling weak in parts of your body
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

38. Feeling tense or keyed up
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

39. Thoughts of death or dying
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

40. Having urges to beat, injure, or harm someone
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

41. Having urges to break or smash things
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

42. Feeling very self-conscious with others
    0 Not at all
    1 A little bit

2 Moderately
3 Quite a bit
4 Extremely

43. Feeling uneasy in crowds, such as shopping or at a movie
0 Not at all
1 A little bit
2 Moderately
3 Quite a bit
4 Extremely

44. Never feeling close to another person
0 Not at all
1 A little bit
2 Moderately
3 Quite a bit
4 Extremely

45. Spells of terror or panic
0 Not at all
1 A little bit
2 Moderately
3 Quite a bit
4 Extremely

46. Getting into frequent arguments
0 Not at all
1 A little bit
2 Moderately
3 Quite a bit
4 Extremely

47. Feeling nervous when you are left alone
0 Not at all
1 A little bit
2 Moderately
3 Quite a bit
4 Extremely

48. Others not giving you proper credit for your achievements
0 Not at all
1 A little bit
2 Moderately
3 Quite a bit
4 Extremely

49. Feeling so restless you couldn't sit still
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

50. Feelings of worthlessness
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

51. Feeling that people will take advantage of you if you let them
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

52. Feelings of guilt
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

53. The idea that something is wrong with your mind
    0 Not at all
    1 A little bit
    2 Moderately
    3 Quite a bit
    4 Extremely

APPENDIX B

Stress Index for Parents of Adolescents (SIPA)

*Caregiver Report: Incompetence/Guilt Subscale*

The complete questionnaire contains 34 statements, but this excerpt contains the nine relevant questions.

Instructions: Read each statement carefully. Please focus on _____ , and choose the response which best represents your opinion. For example, if you sometimes enjoy going to the movies, you would choose "agree" in response to the following statement:

I enjoy going to the movies.

1 Strongly disagree

2 Disagree

3 Not sure

4 Agree

5 Strongly agree

Although you may not find a response that exactly states your feelings, please choose the response that comes closest to describing how you feel. YOUR FIRST REACTION TO EACH QUESTION SHOULD BE YOUR ANSWER.

Please respond to all statements. Questions about your "spouse or partner" refer to your husband or wife, or other parenting partner (i.e. the other person who is most involved in the parenting of your child). If you do not currently have a spouse or partner, simply leave these items blank.

12. I often feel guilty after I get angry at my child.
1 Strongly Disagree
2 Disagree
3 Not Sure
4 Agree
5 Strongly Agree

16. I feel that I am an excellent parent.
1 Strongly Disagree

2 Disagree
3 Not Sure
4 Agree
5 Strongly Agree

19. I am as capable as most other parents I know.
1 Strongly Disagree
2 Disagree
3 Not Sure
4 Agree
5 Strongly Agree

20. I often have the feeling that I cannot handle things very well.
1 Strongly Disagree
2 Disagree
3 Not Sure
4 Agree
5 Strongly Agree

24. When I think about myself as a parent of a teenager, I believe I can handle anything that happens.
1 Strongly Disagree
2 Disagree
3 Not Sure
4 Agree
5 Strongly Agree

28. I feel every time my child does something wrong it is really my fault.
1 Strongly Disagree
2 Disagree
3 Not Sure
4 Agree
5 Strongly Agree

32. When my child does things that bother me on purpose, I don't know what to do.
1 Strongly Disagree
2 Disagree
3 Not Sure
4 Agree
5 Strongly Agree

33. When I think about the kind of parent I am, I often feel guilty or bad about myself.
1 Strongly Disagree

2 Disagree
3 Not Sure
4 Agree
5 Strongly Agree

34. When my child misbehaves or gets in trouble I feel responsible, as if I didn't do something right.
1 Strongly Disagree
2 Disagree
3 Not Sure
4 Agree
5 Strongly Agree

APPENDIX C

Alabama Parenting Questionnaire (APQ)

*Caregiver Report: Consistent Discipline Subscale*

The complete questionnaire contains 39 statements, but this excerpt contains the six relevant questions.

Instructions: The following are a number of statements about your family. Please rate each item based on how often it TYPICALLY happened in your home over the last 30 days. Please think just about the child who is the focus of this assessment.

The possible answers are:
1 Never
2 Almost Never
3 Sometimes
4 Often
5 Always

(Please remember, your answers are strictly confidential.)

3. You threaten to punish your child and then do not actually punish him/her.
1 Never
2 Almost Never
3 Sometimes
4 Often
5 Always

8. Your child talks you out of being punished after he/she has done something wrong.
1 Never
2 Almost Never
3 Sometimes
4 Often
5 Always

12. You feel that getting your child to obey you is more trouble than it's worth.
1 Never
2 Almost Never
3 Sometimes
4 Often
5 Always

22. You let your child out of a punishment early (like lift restrictions earlier than you originally said).
1 Never
2 Almost Never
3 Sometimes
4 Often
5 Always

25. Your child is not punished when he/she has done something wrong.
1 Never
2 Almost Never
3 Sometimes
4 Often
5 Always

31. The punishment you give your child depends on your mood.
1 Never
2 Almost Never
3 Sometimes
4 Often
5 Always

APPENDIX D

Child Behavior Checklist (CBCL)

*Caregiver Report – Aggressive Subscale*

The complete questionnaire contains 112 statements, but this excerpt contains the twenty relevant questions.

Now we are going to ask you some questions about your child's behavior, your family, and your parenting style. Think about _____ when you are answering these questions. (Please remember, your answers are strictly confidential.)

Below is a list of items that describe children and youth. For each item that describes something your child experienced, now or within the past 30 days (refer to the calendar we created together), please choose 2 if the item is very true or often true of your child. Choose 1 if the item is somewhat or sometimes true of your child. If the item is not true of your child, choose the 0. Please answer all items as well as you can, even if some items do not seem to apply to your child.

In the last 30 days...

3. Argues a lot
   0 Not True
   1 Somewhat or Sometimes True
   2 Very True or Often True

8. Can't concentrate, can't pay attention for long
   0 Not True
   1 Somewhat or Sometimes True
   2 Very True or Often True

16. Cruelty, bullying, or meanness to others
   0 Not True
   1 Somewhat or Sometimes True
   2 Very True or Often True

19. Demands a lot of attention
   0 Not True
   1 Somewhat or Sometimes True
   2 Very True or Often True

20. Destroys his/her own things
    0 Not True
    1 Somewhat or Sometimes True
    2 Very True or Often True

21. Destroys things belonging to his/her family or others
    0 Not True
    1 Somewhat or Sometimes True
    2 Very True or Often True

22. Disobedient at home
    0 Not True
    1 Somewhat or Sometimes True
    2 Very True or Often True

23. Disobedient at school
    0 Not True
    1 Somewhat or Sometimes True
    2 Very True or Often True

27. Easily jealous
    0 Not True
    1 Somewhat or Sometimes True
    2 Very True or Often True

37. Gets in many fights
    0 Not True
    1 Somewhat or Sometimes True
    2 Very True or Often True

57. Physically attacks people
    0 Not True
    1 Somewhat or Sometimes True
    2 Very True or Often True

68. Screams a lot
    0 Not True
    1 Somewhat or Sometimes True
    2 Very True or Often True

74. Showing off or clowning
    0 Not True
    1 Somewhat or Sometimes True
    2 Very True or Often True

86. Stubborn, sullen, or irritable

0 Not True
1 Somewhat or Sometimes True
2 Very True or Often True

87. Sudden changes in mood or feelings
0 Not True
1 Somewhat or Sometimes True
2 Very True or Often True

93. Talks too much
0 Not True
1 Somewhat or Sometimes True
2 Very True or Often True

94. Teases a lot
0 Not True
1 Somewhat or Sometimes True
2 Very True or Often True

95. Temper tantrums or hot temper
0 Not True
1 Somewhat or Sometimes True
2 Very True or Often True

97. Threatens people
0 Not True
1 Somewhat or Sometimes True
2 Very True or Often True

104. Unusually loud
0 Not True
1 Somewhat or Sometimes True
2 Very True or Often True

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INDEX

Tables and Figures

*Table 1: Descriptive Statistics of Study Variables*

| Measures | % | M | SD | Range |
|---|---|---|---|---|
| Caregiver Psychopathology (T1) | - | 57.73 | 13.46 | 0.00-80.00 |
| Caregiver Incompetence (T4) | - | 2.44 | .80 | 1.00-4.56 |
| Consistent Discipline (T4) | - | 3.59 | .68 | 2.00-5.00 |
| Low Propensity for Aggressive Behaviors (T1) | 72.81% | - | - | - |
| Low Propensity for Aggressive Behaviors (T4) | 81.58% | - | - | - |
| Low Propensity for Aggressive Behaviors (T5) | 79.82% | - | - | - |

Note: M and SD represent Mean and Standard Deviation, respectively.

*Table 2: Bivariate Correlations Between Study Variables*

| Measures | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1.Caregiver Psychopathology (T1) | - | | | |
| 2. Caregiver Incompetence (T4) | .32** | - | | |
| 3. Consistent Discipline (T4) | -.30** | -.53** | - | |
| 4. Youth Aggressive Behavior (T5) | .22* | .16 | -.16 | - |

*Note:* * indicates $p < .05$ . ** indicates that $p < .01$.

*Table 3: Regression Coefficients from PROCESS Procedures*

| Variables | Parent Incompetence (T4) | Consistent Discipline (T4) | Youth Aggressive Behavior (T5) |
|---|---|---|---|
| Constant | 2.57** | 5.28** | -6.65 |
| Caregiver Psychopathology | .02* | .00 | .04 |
| Youth Age | -.05 | -.01 | -.31 |
| Hollingshead | -.01 | .01 | -.03 |
| Youth Aggressive Behaviors (T1) | .00 | -.01 | .15** |
| Time Between T1-T5 | .01 | .01 | -.22 |
| Parent Incompetence | - | -.40** | .29 |
| Consistent Discipline | - | - | -.06 |
| *R^2* | .37 | .57 | - |
| *Adjusted R^2* | .14 | .32 | - |
| *F* | 3.41** | 8.40** | - |

*Note*: * indicates $p < .05$ . ** indicates that $p < .01$. $N = 114$.

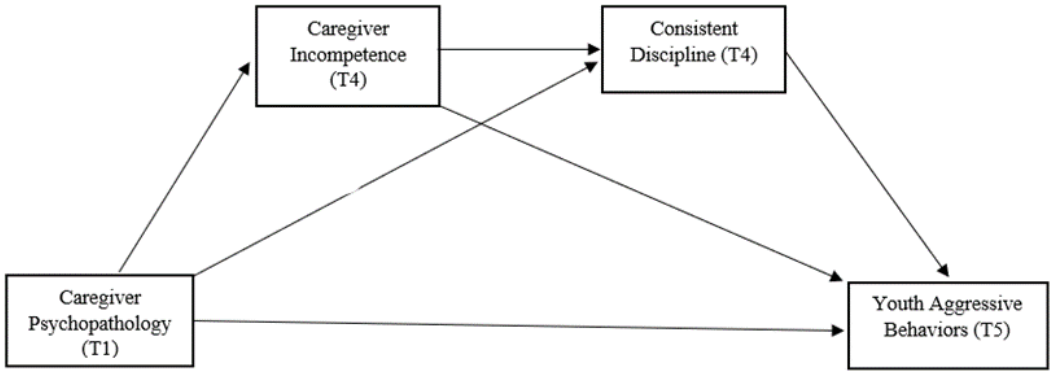


Figure 1: A depiction of the serial mediation model of T1 caregiver psychopathology and T5 youth aggressive behaviors being mediated by caregiver incompetence and consistent discipline at T4.

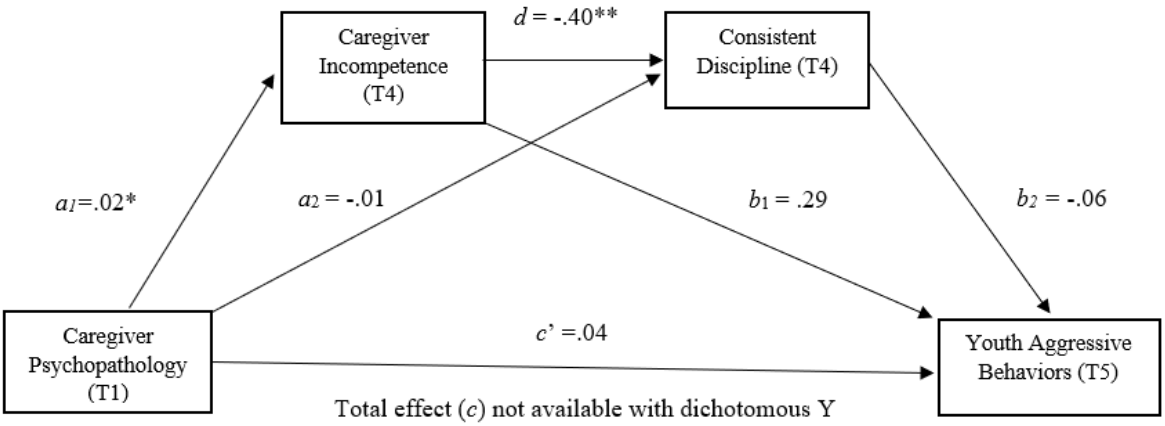


Figure 2*:* Serial mediation model of caregiver incompetence and consistent discipline on the relationship between caregiver psychopathology and youth aggressive behaviors with non-standardized Beta coefficients. * indicates $p < .05$ . ** indicates that $p < .01$. $N =$ 114.