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College of Humanities and Sciences  
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HOW DOES MOTHERS' DEPRESSION INFLUENCE ADOLESCENTS'  
AGGRESSION? THE ROLE OF PARENTING, FAMILY FUNCTIONING AND  
INFORMANT DISCREPANCY

A thesis submitted in partial fulfillment of the requirements for the degree of Master of  
Science in Psychology at Virginia Commonwealth University.

by

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## Acknowledgement

This research was supported in part by a cooperative agreement (#U81/CCU317633) from the Centers for Disease Control and Prevention (CDC), awarded to Albert Farrell. The findings and conclusions in this report are those of the author and do not necessarily represent the official position of the CDC. I would like to acknowledge the members of this thesis committee, Dr. Albert Farrell, Dr. Bryce McLeod, and Dr. Kevin Sutherland, for their time and support throughout this project. I am especially thankful to Albert Farrell for his guidance, mentorship, and patience. I am also grateful to the Multisite Violence Prevention Project for allowing me to use their data in the present study. Finally, I would like to thank my friends and family, who have provided me with continual support and encouragement throughout this process. I would especially like to thank my parents for their love and support and for always pushing me to succeed.

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## Abstract

HOW DOES MOTHERS' DEPRESSION INFLUENCE ADOLESCENTS'  
AGGRESSION? THE ROLE OF PARENTING, FAMILY FUNCTIONING AND  
INFORMANT DISCREPANCY

By Kelly L. Pugh

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science at Virginia Commonwealth University.

Virginia Commonwealth University, 2009

Major Director: Albert D. Farrell, PhD  
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Previous research has found that maternal depression is predictive of adolescents' aggression. The present study examined three mechanisms believed to account for this relation: parenting practices, family functioning, and informant discrepancy. The data for this study are from the Multisite Violence Prevention Project which collected data from a high-risk sample of sixth grade students, parents, and core teachers. A within-subjects analysis of variance examined the association between maternal depression and informant discrepancy. Structural equation modeling compared the relation between maternal depression and adolescents' aggression as a function of parenting practices and family functioning. Results indicated that maternal depression was related to adolescents'

aggression and moderated the degree of the discrepancy between reports of aggression. Results indicated that the relation between maternal depression and mother-report of adolescents' aggression was mediated by parenting practices and family functioning, with parenting practices mediating the relation over and beyond family functioning.

## Introduction

Aggressive children comprise more than one-third of the referrals to psychological clinics in the United States (Meichenbaum, 2007). Furthermore, about one-quarter of the deaths among children and young adults, ages 10 to 24, are caused by either homicide or suicide (Center for Disease Control [CDC], 2005). These statistics highlight the alarming rates of aggression among adolescents and have served as an impetus for research on youth violence prevention and intervention. The urgency of this matter has been further supported by research findings on the negative consequences of the early onset of aggression in childhood and adolescence (Valois, MacDonald, Bretous, Fischer, & Drane, 2002). These negative consequences include delinquency, incarceration, and overall life dissatisfaction, and can impact not only the individual participating in these behaviors, but the entire community (Bardone et al., 1998; Timko, Cronkite, Berg, & Moos, 2002; Valois et al., 2002).

With aggression being highly problematic among adolescents, it is not surprising that research has focused on exploring the antecedents to aggression among adolescents. One area of research that has been examined is the role of parenting characteristics in the development of aggression among youth. More specifically, the impact of maternal depression on child and adolescent functioning has gained a great deal of attention. With

depression affecting nearly 20% of adults and the highest rates of depression occurring among women during their childbearing years, the impact of maternal mental illness on children makes research in this area both warranted and necessary (Olson, Dietrich, Prazar, & Hurley, 2008). Parents have been found to play a crucial role in fostering healthy and adaptive child development, and maternal depression can significantly impact a child's behaviors, thoughts, and psychological well-being (Mendel, 2004). Research has indicated that regardless of the severity or chronicity of the depression among mothers, both clinical depression and subthreshold depressive symptoms can negatively impact a child's adjustment and well-being (Hyland, 1987; Keller, 1988; Naerde, Tambs, Mathiesen, Dalgard, & Samuelsen, 2000; Ostler et al., 2001).

Past research has documented the impact of maternal depression on an adolescent's psychological well-being. A substantial body of research has highlighted the prevalence of internalizing disorders (e.g. depression) among children of mothers suffering from depression (Robila & Krishnakumar, 2006; Weissman et al., 2005). More recently, research has emerged supporting the role of the indirect effects of maternal depression on adolescents, including its effect on externalizing behaviors, specifically aggression (Pilowsky et al., 2006; Weissman et al., 2006). Researchers examining the role of maternal depression on adolescents' aggression have proposed three mechanisms to account for this relation. First, it has been argued that maternal depression impacts parenting practices (e.g. parental monitoring), which in turn lead to aggression among youth (e.g. Gelfand & Teti, 1990). Second, it has been proposed that maternal depression impacts family functioning (e.g. family cohesiveness), which then impacts adolescents'

aggression (e.g. Timko et al., 2002). Lastly, researchers have proposed that higher rates of aggressive behaviors among adolescents of depressed mothers are the result of informant discrepancy between a mother's and an adolescent's report of aggression (Richters, 1992). More specifically, according to the depression distortion bias hypothesis, this relation is a measurement artifact in that depressed mothers over-report adolescent levels of aggression (Richters, 1992).

Past research has provided a substantial evidence base for investigating the link between maternal depression and adolescents' aggression (Pilowsky et al., 2006). However, previous research has displayed several limitations that need to be addressed. First, previous studies have primarily focused on a single mechanism that partially accounted for the relation between parental depression and adolescents' aggression (e.g. parenting practices, family functioning, or informant discrepancy), and the collective effect of these factors has not been examined. The present study examined the role of parenting practices, family functioning, and informant discrepancy, and examined the impact of each mechanism in the context of models and theories that researchers have proposed in the past. Past studies have also failed to conduct research on high-risk populations (e.g. past studies have used predominantly Caucasian populations) even though research shows that parental depression among minorities and low income families place children at a higher risk for negative outcomes (e.g. Ostler et al., 2000). The present study included a predominantly low to middle class sample with a high percentage of minority families. Lastly, past research has exhibited methodological limitations (e.g. small sample sizes) that the present study addressed.

The following literature review provides an overview of aggression among adolescents, including definitions and prevalence rates. Next, it examines studies that have explored the impact of maternal depression on adolescents' aggression. Research examining parental depression and maternal depression are both included in this review. Although the focus of the present study is on maternal depression, it is important to also include parental depression research studies in this literature review because research on parental depression has consistently included samples that are primarily comprised of mothers. Next, the literature review examines past empirical studies on how parenting practices, family functioning, and informant discrepancy account for the relation between maternal depression and adolescents' aggression. In addition, high-risk variables that may impact the relationship between parental depression and adolescents' aggression and the three aforementioned mechanisms are highlighted.

## Review of the Literature

### *Aggression among Adolescents*

Aggression is a growing problem among youth, with behaviors associated with aggression and delinquency peaking during adolescence (Dryfoos, 1990; Roughman, 1981). Aggression involves the intention of an individual or a group of individuals to harm others, either verbally, physically, or interpersonally, and has been described as a behavior that leads to the injury of either another individual or to their property (Archer & Coyne, 2005; Brook, Rosenberg, Brook, Balka, & Meade, 2004). Aggressive behaviors have also been defined as, “affective behavior suggestive of anger or irritation, such as yelling or ‘eye rolling’ as well as verbal criticisms, threats, or arguments” (Davis, Sheeber, Hops, & Tildesley, 2000, p. 452). Studies have demonstrated that aggression is linked to deleterious life trajectories and maladaptive psychological functioning (Coie & Dodge, 1998). Hence, the urgency to study the causes and circumstances of adolescents’ aggression is both warranted and necessary.

Aggression is a multifaceted behavior with several subtypes. It can be classified as either overt aggression or indirect aggression, and these subtypes can be distinguished from one another by the method of harm used and the intended goal of the aggression



(Crick & Grotpeter, 1995). Overt aggression involves direct harm to another individual and can include physical and verbal aggressive behaviors, such as hitting, kicking, punching, and threatening (Coie & Dodge, 1998). Alternatively, indirect aggression involves harm to another individual by damaging a social relationship and can include gossiping, spreading rumors, and telling others to not be friends with a target child (Crick & Grotpeter, 1995; Crick et al., 1999). Among adolescents, males typically display higher rates of overt aggression (e.g. violent crimes and physical aggression), although, more recent research has indicated that female adolescents may exhibit a comparable amount of aggression when indirect aggression is taken into account (Crick & Rose, 2000). In addition to these two forms of aggression, there are also two functions of aggressive behavior, proactive and reactive (Dodge, 1991; Dodge & Coie, 1987; Crick & Dodge, 1996). Proactive aggressive behavior is unprovoked aggression that is used to gain dominance over others. It is goal-directed and deliberate. In contrast, reactive aggression is provoked aggression that is used in response to provocation or threat and it is often accompanied by anger (Dodge & Coie, 1987; Dodge, 1991; Crick & Dodge, 1996).

Two patterns of aggression have been highlighted in the literature, early-onset and adolescent-onset aggression. An early-onset persistent aggression pattern includes the development of behavior problems earlier in life, as early as 3 years old. This type of aggression is associated with more serious aggressive behavior during adolescence and is likely to develop into a stable pattern of criminality in adulthood. On the other hand, an adolescent-onset aggression pattern begins during middle to late adolescence and the

aggression generally discontinues during young adulthood. (Moffitt, 1993 ; Moffitt, Caspi, Dickson, Silva, & Stanton, 1996).

Within the Diagnostic and Statistical Manual for Mental Disorders, Fourth Edition (DSM-IV), aggression is one of the key features of disruptive behavior disorders (American Psychiatric Association (APA), 1994). Disruptive behavior disorders include oppositional defiant disorder and conduct disorder, and symptoms associated with disruptive behavior disorders include aggression, noncompliance, defiance to authority figures, aversive interpersonal behavior and angry tantrums (Children and Adults with Attention-Deficit/Hyperactivity Disorder [CHADD], 2005). The main difference between oppositional defiant disorder and conduct disorder is that conduct disorder includes more severe symptoms and occurs later on the developmental continuum (CHADD, 2005).

Prevalence rates of aggression are particularly high among adolescents. A recent national survey found the following lifetime prevalence estimates for disruptive behavior disorders among young adults ages 18-25 years old: oppositional defiant disorder (10%), conduct disorder (11%), intermittent explosive disorder (8%), and any impulse control disorder (27%) (Kessler et al., 2005). In addition, estimates of oppositional defiant disorder and conduct disorder among school-age children have been found to range from 5% to 25%. One study examining the rates of conduct and emotional problems across a 25-year period found that the number of adolescents with severe conduct problems more than doubled from 1974 to 1999 (Collishaw, Maughan, Goodman & Pickles, 2004).

Research has also found that 53% of middle school adolescents reported having experienced violence perpetration and 43% of high school freshman reported hitting

another student in the past 6 months (Kingery, McCoy-Simandle, & Clayton, 1997; Saner and Ellickson, 1996). In 2004, a nationwide survey found that 33% of high school students reported being in at least one physical fight in the past 12 months and 17% reported carrying a weapon at least once in the past 30 days (CDC, 2004). In addition, 30% of sixth through tenth grade students reported being the target of or perpetrator of bullying. Another research survey found that an estimated 15 adolescents and young adults, ages 10 to 24, are murdered every day and an additional 750,000 are treated in emergency care for injuries related to violence (CDC, 2006). Within this age group, homicide is the leading cause of death among African Americans and the second leading cause of death among Hispanics (CDC, 2006). Moreover, homicide is the third leading cause of death among children, ages 5 to 14 years old, and the second leading cause of death among youth, ages 15 to 24 years old (Kachur et al., 1996; Murphy, 2000). The prevalence and incidence of youth violence across the world indicates that the highest rates of incidence among youth occur in United States (Department of Health and Human Services [DHHS], 2001).

#### *Effects of Maternal Depression on Adolescents' aggression*

The high prevalence of depression among mothers in the United States has sparked research on the impact of maternal depression on subsequent child behavior and adjustment. Depression is one of the most prevalent mental illnesses affecting adults in the United States. In fact, a recent nationally representative survey of the lifetime prevalence and age of onset of DSM-IV disorders found that nearly 20% of the population meets criteria for depression and the incidence of depression among adults has

continued to rise (Kessler et al., 2005). The prevalence of major depression is two times higher among females than males, despite both genders having an equal chance for inheriting major depression (Kendler & Prescott, 1999). It has been estimated that one-third of all women will suffer from depression at some point in their lifetime (Kendler & Prescott, 1999). Females suffering from depression are likely to have recurring short depressive episodes and more than 80% will experience more than one depressive episode across their lifespan (Kessler, 2006). The highest rates of depression among women are found among mothers of school-age and adolescent children, with rates ranging from 20% to 41%, making depression the number one debilitating disorder among females (Hammen & Brennan, 2003; Hammen, Burge, Burney, & Adrian, 1990; Murray & Lopez, 1996).

According to the DSM-IV, an individual suffering from a major depressive disorder will experience at least five of the following symptoms during a two-week period and these symptoms must represent a change from normal functioning: depressed mood most of the day; almost everyday; loss of interest or pleasure in most activities most of the day; almost everyday; significant weight loss or gain; appetite changes; sleep disturbances; psychomotor agitation or retardation; fatigue or loss of energy; feelings of worthlessness; difficulty concentrating; recurrent thoughts of death; suicidal ideation or attempt; and evident impairment (APA, 1994). Research has found that having a depressive disorder or subthreshold depressive symptoms (e.g. experiencing depressive symptoms in the absence of a disorder) can both lead to impairment in an individual's well-being and functioning. Furthermore, individuals with depressive symptoms not

severe enough to be diagnosed as depression have reported substantial impairment socially, occupationally, and physically (Naerde et al., 2000; Task Force on the DSM-IV, 1994).

The impact of maternal depression on children has been well-documented and has been recognized by psychologists as being problematic. “Good therapists know that often when a child is in trouble, parents are depressed. Though the parents often feel that the child’s behavior is the source of their distress, in fact more often the child is reacting to the parent’s depression” (O’Connor, 2006, p. 1). Depression has been regarded in the literature as being the one parenting characteristic that most strongly relates to poor functioning in children and adolescents (Beardslee, Bemporad, Keller, & Klerman, 1983; Forehand, McCombs, & Brody, 1987; Orvaschel, 1983; Pilowsky et al., 2006).

Children of depressed mothers have been found to experience impairments across social and school domains, and are at a greater risk for developing a range of disorders, including internalizing disorders, such as depression and anxiety, and externalizing disorders, such as oppositional defiant disorder, conduct disorder, and dysregulated aggression (e.g. Cummings & Davies, 1994; Gelfand & Teti, 1990; Goodman & Tully, 2006; Luoma et al., 2001). Furthermore, the emotional state of depressed mothers has been found to affect a child’s social adjustment, self-esteem, and social competence and contribute to poor child outcomes (Goodman & Tully, 2006; Splete, 2006; Weissman, et al., 1986; Zuckerman & Beardslee, 1987). Research has also suggested that the impairments experienced by a depressed mother (e.g. impaired communication and difficulty controlling their own hostility and aggression) are linked to deviant behaviors

among adolescents, including drug abuse, problems in school, and hostile conflicts with their mothers (Weissman, & Siegel, 1972). Moreover, the type of impairment experienced by children of depressed mothers has been found to vary across ages and developmental stages. Younger children are more likely to experience dysfunctional parent-child attachment and compliance problems, and older children are more likely to experience interpersonal difficulties with peers and teachers and to develop problems with school achievement (Gelfand & Teti, 1990).

Children of depressed mothers have also been found to be at an increased risk for developing psychological disorders. Hammen and her colleagues (1990) found that children of mothers suffering from unipolar depression were more likely to receive at least one mental illness diagnosis (82%), as compared to children whose mothers were medically ill (43%) and mothers who did not suffer from mental or physical illness (32%). The age of onset of mental illness among children of mothers suffering from unipolar depression was found to be about 14 years old. In addition, children of mothers suffering from bipolar depression also experienced high rates of mental illness diagnoses (72%). Research indicates that depressive symptoms are similar for unipolar or bipolar depression, and both forms of depression are associated with increases in child problems (Downey & Coyne, 1990; Grunebaum, 1984; Hyland, 1987; Keller, 1988).

Research has specifically found that children of depressed mothers are at a higher risk for exhibiting behavioral problems, including aggression and noncompliance (Beardslee, Versage, & Gladstone, 1998; Compas, Langrock, Keller, Merchant, & Copeland, 2002; Downey & Coyne, 1990; Gelfand & Teti, 1990; Lieb, Isensee, Hofler,

Pfister, & Wittchen, 2002). Children of depressed parents, as compared to children of nondepressed parents, are two to five times more likely to exhibit behavior problems (Downey & Coyne, 1990; Welsh-Allis & Ye, 1988). The relation between maternal depression and child behavior problems has been supported across all ages, from infancy to adolescence (Campbell, 1994; Campbell, Pierce, Moore, Marakovitz, & Newby, 1996; Thomas, McCombs, Forehand, & Neighbors, 1995). For example, among toddlers, maternal depression has been associated with externalizing behaviors, problem behaviors, and lower competencies among boys (Shaw, Vondra, Hommerding, Keenan, & Dunn, 1994). For school-aged children, Spieker and her colleagues (1999) found that boys of depressed parents and children of severely depressed parents displayed the highest levels of disruptive behaviors. In addition, past research has found that exposure to chronic or higher levels of maternal depression is associated with hostile behaviors and conduct disorders among children (Alpern & Lyons-Ruth, 1993; Griest, Forehand, Wells, & McMahon, 1980; Mash & Johnston, 1983; Patterson, 1982). Finally, among adolescents, research has found that a relation exists between parental depression and adolescents' aggression (Pilowsky et al., 2006).

Although the relation between maternal depression and aggressive behaviors has been supported in several studies, research on the nature of this relation has produced mixed findings (Gelfand & Teti, 1990). For example, in contrast to the aforementioned research findings, an observational study found that depressed mothers, as compared to a control group, were more likely to suppress or reduce aggressive behaviors among children (Hops et al., 1987). Research has also found mixed findings for the impact of

maternal depression across different depressive states (e.g. chronicity and severity of the depression). One study found that preadolescent and adolescent children of currently depressed mothers were at a higher risk for developing disruptive behavior disorders, but the severity and chronicity of the depression did not have a significant impact on the relation between maternal depression and child disruptive behavior disorders (Pilowsky et al., 2006). Research also found that the impact of maternal depression on a child's mental health persisted even when the depression attenuated (Billings & Moos, 1986; Lee & Gotlib, 1991). On the other hand, research suggests that the treatment and remission of depression among mothers is associated with fewer current diagnoses of mental illness disorders and symptoms among children, supporting the notion that changes in parental depression occur in congruence with changes in child psychopathology and adjustment (Weissman, 1983; Weissman et al., 2006; Lovejoy, Graczyk, O'Hare, & Neuman, 2000).

Another important issue that has been considered when studying the effects of maternal depression on adolescents' aggression is the impact of currently depressed mothers, as compared to remitted mothers with a history of depression. Research examining remitted depressed mothers has reported mixed findings. Billings and Moos (1983) found improvements among remitted depressed parents and their family social environments, but children of remitted parents still reported functioning more poorly than children of control parents. Although the children of remitted parents functioned more poorly than children of control parents, the children of remitted parents displayed less severe dysfunction (e.g. 26% displayed behavior problems) than the children of nonremitted parents (e.g. 39% displayed behavior problems). More specifically, child



dysfunction for nonremitted depressed mothers increased from 43% at intake to 52% at follow-up, whereas children of remitted parents increased from 21% at intake to 27% at follow-up. Similarly, Cox and colleagues (1987) also found that remitted depressed parents reported more dysfunction after two years of remission than controls, but less dysfunction than was reported by currently depressed mothers.

Researchers have also found that a mother's current depressive status is a better predictor of a child's psychological adjustment than a mother's past history of depression (Hammen, Gordon, Burge, Adrian, Jaenicke, & Hiroto, 1987). For example, Pilowsky and colleagues (2006) found that preadolescent and adolescent children of currently depressed mothers were at a high risk for developing disruptive behavior disorders (Pilowsky et al., 2006). Additionally, Hammen and her colleagues (1987) found that current depression, but not lifetime history of depression, was a significant predictor of a child's diagnostic status and behavior problems. Another study found that the problem behavior level of children consistently fluctuated with a mother's depressive symptoms (Radke-Yarrow, Nottlemann, Martinez, Fox, & Belmont, 1992). More specifically, by middle to later childhood, children of currently depressed parents were more likely than children of healthy parents to exhibit increases in disruptive problems and have multiple behavior problems (Radke-Yarrow et al., 1992).

In conclusion, it is clear that maternal depression places adolescents at a higher risk for aggression and maladaptive outcomes. Understanding the impact of maternal depression on adolescent functioning may have important implications for the prevention of negative outcomes and the promotion of resiliency in high-risk children and

adolescents. Therefore, the aim of the current study is to investigate the mechanisms that account for the relation between maternal depression and adolescents' aggression. More specifically, the goal of the present study is not simply to examine the direct relation between maternal depression and adolescents' aggression, but to evaluate how three different mechanisms (parenting practices, family functioning and informant discrepancy) account for the relation between maternal depression and an adolescent's aggressive outcomes. The following literature review explores how parenting practices, family functioning and informant discrepancy contribute to aggression exhibited by adolescents of depressed mothers, in order to understand how each mechanism places an adolescent at-risk for adverse outcomes, specifically aggression.

#### *Maternal Depression and Parenting*

Parenting practices have been considered a potential mechanism to account for the relation between maternal depression and adolescents' aggression. In the present study, parenting practices are defined as specific parenting behaviors exhibited in specific situations during parent-child interaction (Wood, McLeod, Sigman, Hwang, & Chu, 2003). For example, a parenting practice could include a mother talking to her child after school about his or her plan for the upcoming day. Parenting practices are distinct from parenting styles, which are global patterns of behavior over an extended period of time (Holden & Edwards, 1989). Parenting practices are specific behaviors exhibited in specific situations and are generally measured using "time-delimited" self-report assessments or observations (Wood et al., 2003, p. 135).

Past empirical research examining parenting practices has primarily focused on studying infants and children. For example, several research studies have examined the mother-infant relationship and found that depressed mothers were negative, intrusive, and withdrawn, which elicited anger, reduced activity, and social withdrawal from their infants (e.g. Field et al., 1990; Lee, Thullen, & Hans, 2006). In addition, Garstein and Fagot (2003) examined the mother-child relationship among depressed mothers and found that parenting practices (e.g. frequency of physical punishment) mediated the relation between parental depressive symptoms and externalizing behaviors among preschool aged children (Ghodsian, Zajicek, & Wolkind, 1984). Research conducted on school-age children found that coercive parenting and poor parental monitoring are associated with child conduct problems and antisocial and aggressive behaviors (Kilgore, Snyder, & Lentz, 2000; Loeber & Dishion, 1984; Patterson, 1982; Patterson & Southamer-Loeber, 1984).

Fewer researchers have studied the adolescent population and less research has been conducted on the role of parenting practices as a mediator in the relation between maternal depression and adolescents' aggression. The following review highlights the theoretical underpinnings and empirical research that has examined the relation between maternal depression and parenting, the relation between parenting practices and adolescents' aggression, and the role of parenting practices as a mediator in the relation between maternal depression and adolescents' aggression.

One theory that has been proposed to explain the relation between maternal depression and parenting practices is the interpersonal perspective. According to the

interpersonal perspective, the effects of maternal depression extend beyond the depressed mother and can impact the interactions between a depressed mother and her adolescent. The interpersonal relationship between a mother and her adolescent is critical to an adolescent's development and maternal depression can impact behaviors associated with the parent-child relationship (Lewis, 2000). According to the interpersonal perspective, maternal depression is theorized to negatively affect the interpersonal relationship between a depressed mother and her adolescent by generating difficult parent-child interactions, maladaptive parenting styles, and ineffective parenting techniques (Cicchetti & Toth, 1998; Dodge, 1990).

Empirical research has indicated that depressed mothers experience interpersonal difficulties during interactions with their child. Depressed mothers, as compared to nondepressed mothers, have been found to be more negative, irritable, critical, scolding, unsupportive, intrusive, aggressive, physically abusive, unresponsive, and inattentive with their children (e.g. Frye & Garber, 2005; Gelfand & Teti, 1990; Lovejoy et al., 2000). In addition, depressed mothers have been found to experience greater difficulty with negative or hostile exchanges, disengagement, and social interactions (Lovejoy et al., 2000).

Empirical research has also suggested that depressed mothers are more likely to use maladaptive parenting styles and ineffective parenting techniques during interpersonal exchanges with their child. These include using coercive parenting behaviors (e.g. criticism), engaging in escalating cycles of coercion, offering ineffective directives and fewer problem-solving strategies, offering fewer instructional behaviors

(e.g. lack of suggestions or feedback), experiencing more interpersonal tension and conflicts, and spanking their children more often (Eamon, 2001; Gartstein & Fagot, 2003; Hammen & Brennan, 2002; Webster-Stratton and Hammond, 1988; Weissman & Paykel, 1974). Depressed parents are also more likely to be inconsistent, lax, and ineffective in child management and discipline (Cunningham, Benness, & Siegel, 1988; Forehand, Lautenschlager, Faust, & Graziano, 1986; Zahn-Waxler, Iannotti, Cummings, & Denham, 1990). In addition, depressed parents are less likely to give their children the necessary structure, guidance or rule enforcement (Goodman & Brumley, 1990). Moreover, depressed parents have been found to use discipline and teaching strategies that require the least effort, including conflict avoidance, being unlikely to end a conflict in compromise, and being less likely to use explanations, persuasion, or reasoning with their children (Cox et al., 1987; Kochanska, Radke-Yarrow, Kuczynski, & Friedman, 1987).

The maladaptive parenting techniques perspective has also been presented to explain the relation between parenting practices and adolescents' aggression. According to this perspective, maladaptive parenting practices (e.g. ineffective discipline tactics) are linked to aggressive behaviors among adolescents because an adolescent develops affect regulation difficulties as a result of exposure to maladaptive parenting techniques (Cummings & Davies, 1994). Zillman (1983) proposed that repeated exposure to negative and emotion-arousing interactions with a depressed parent contributes to the development of arousal-regulation difficulties because the adolescent learns to pair an arousal-inducing stimulus with negative provocation. This can lead to an adolescent using aggression in situations where he or she is unable to regulate his or her emotions

(Zillman, 1983). Therefore, maladaptive parenting techniques hinder an adolescent from developing healthy affect regulation and this gives rise to aggressive behaviors in situations where the adolescent is provoked and unable to control aggressive reactions (Cummings & Davies, 1994).

Several research studies have identified maladaptive discipline practices that are linked to adolescents' aggression (Jaycox & Repetti, 1993; Loeber & Dishion, 1984; Patterson, 1982). One nationally representative study examined the relation between parents' physical and verbal aggression and adolescent behavior problems. Higher rates of verbal aggression and severe physical violence exhibited by parents were associated with higher rates of physical aggression and delinquent behavior among children and adolescents (Vissing, Straus, Gelles, & Harrop, 1991). Sheehan and Watson (2008) examined the link between maternal discipline and child and adolescents' aggression among a predominantly Caucasian sample of mother-child dyads and found that aggressive maternal discipline predicted later child and adolescents' aggression.

In another study, Lansford and her colleagues (2004) examined ethnic differences in the link between parental physical discipline and externalizing behaviors in a longitudinal study that tracked children from 5 years to 16 years of age. The study found that early physical discipline at age five was predictive of higher levels of adolescent externalizing behaviors among Caucasian adolescents and lower levels of externalizing behavior problems among African American adolescents. More specifically, early physical discipline was associated with higher levels of externalizing behaviors, reactive aggression, school trouble and police trouble among Caucasian adolescents and early

physical discipline was not significantly correlated with these externalizing behaviors among African American adolescents. Furthermore, higher rates of parental physical discipline in sixth and eighth grade were associated with higher externalizing behaviors, reactive aggression, and violence among Caucasian adolescents. On the other hand, higher parental physical discipline in sixth and eighth grade was associated with lower violence among African American adolescents (Lansford et al., 2004). Another study examined the relation between harsh punishment and child adjustment and behavior problems among a nationally representative sample of families (Amato & Fowler, 2002). The study found that higher levels of harsh punishment used by mothers were associated with lower rates of an adolescent's adjustment and behavior problems. However, this relation was not found for fathers (Amato & Fowler, 2002). In contrast to these findings, Simons and his colleagues (1994) examined the relation between harsh corporal punishment and adolescents' aggression among a sample of Caucasian families in the midwestern region of the United States. The study found that harsh corporal punishment was not associated with adolescents' aggression (Simons et al., 1994).

Management practices within a family (e.g. levels of supervision, discipline, clear communication of expectations from parent to child, and praise and reinforcement) have also been linked to aggression among adolescents. Herrenkohl and his colleagues (2006) examined the relation between family management trajectories and adolescent violent offending trajectories among an ethnically diverse sample of families (48% European-American, 25% African-American, and 22% Asian or Pacific Islander). Three trajectories were identified. Adolescents in families with low family management were more likely to

follow chronic violent trajectories that increased later in adolescence. On the other hand, adolescents in families with a stable and highly positive family management were more likely to follow a nonviolent trajectory. Lastly, adolescents in families with low family management that changed to high family management across the course of the study followed a nonviolent trajectory and exhibited a similar trajectory to adolescents who consistently experienced high family management (Herrenkohl et al., 2006).

Research has also found that parental support and monitoring are associated with child and adolescent adjustment and behavior problems. More specifically, a nationally representative study found that higher levels of parental support and monitoring were associated with lower child adjustment and behavior problems (Amato & Fowler, 2002). MacMillan and Violato (2008) examined parental social support and an adolescent's emotional and behavioral competence among a sample of Canadian families and found that a parent's level of social support was predictive of an adolescent's emotional and behavioral competence two years later. In addition, Pettit and his colleagues (2001) examined the longitudinal relation between maternal monitoring and later externalizing behaviors among a predominantly Caucasian, middle-class sample of mothers and adolescents. Higher maternal monitoring was predictive of lower adolescent delinquent behavior problems (Pettit et al., 2001). Similarly, Simons-Morton and his colleagues (2008) examined the influence of parental monitoring among a predominantly Caucasian sample of families and found that low parental monitoring was associated with adolescent conduct problems. In addition, a meta-analysis study found that parental supervision predicted juvenile conduct problems and delinquency (Loeber & Stouthamer-Loeber,



1986). Orpinas and her colleagues (1999) also examined the relation between parental monitoring and aggressive behaviors among adolescents an ethnically diverse sample of urban families (66% Hispanic and 19% African American). The study found an inverse negative relation between parental monitoring and an adolescent's aggressive behaviors (e.g. aggression, fighting, injuries due to fighting, and weapon carrying) (Orpinas et al., 1999).

In another study, Ary and his colleagues (1999) examined the influence of family relations and parental monitoring on adolescent problem behaviors (anti-social behavior, high-risk sexual behavior, academic failure, and substance use) among a predominantly Caucasian sample of urban families. Families with higher levels of conflict and lower levels of positive family relations were more likely to display poor parental monitoring, and poor parental monitoring was associated with later adolescent problem behaviors (Ary et al., 1999). Another study examined the influence of parents' positive monitoring and psychological control on adolescent dating victimization and relational aggression among a predominantly Caucasian sample of families (Leadbeater, Banister, Ellis, & Yeung, 2008). Parental monitoring was found to be negatively associated with rates of dating victimization and relational aggression among adolescents. In addition, maternal psychological control, but not paternal psychological control, was associated with higher rates of relational aggression among adolescents (Leadbeater et al., 2008).

Another parenting variable that research suggests impacts adolescents' aggression is involvement. One meta-analysis examined concurrent and longitudinal studies on the relation between parent-child involvement and juvenile conduct problems and

delinquency (Loeber & Stouthamer-Loeber, 1986). Parent-child involvement was found to be a powerful predictor of juvenile conduct problems and delinquency, and the degree of conduct problems experienced by the child was associated with the level of deficiencies in parenting skills. In fact, a change in parenting behaviors was found to be associated with lower rates of a child's conduct problems (Loeber & Stouthamer-Loeber, 1986). Another study examined the relation between quality of parental involvement and adolescents' aggression among a sample of Caucasian families in the midwestern region of the United States and found that the quality of parental involvement was negatively associated with adolescents' aggression (Simons et al., 1994).

The dynamics of the parent-child relationship have also been linked to aggressive outcomes among adolescents. Kim and her colleagues (2003) found that higher levels of harsh-inconsistent parenting and parents' hostility were associated with adolescents' conduct problems. In addition, adolescents with conduct disorder, as compared to adolescents with no problems, reported receiving less warmth and nurturing-involvement from their parents (Kim et al., 2003). Similarly, Macmillan and Violato (2008) found that parenting quality among a sample of Canadian families predicted an adolescent's emotional and behavioral competence. A meta-analysis also found that parent-caregiving was more strongly associated with externalizing behaviors among boys than girls, particularly among preadolescents and their mothers (Rothbaum & Weisz, 1994).

Positive parenting practices have also been found to serve as a promotive factor against aggressive outcomes among adolescents of depressed mothers. One longitudinal study examined the role of positive parenting in parent-child relationships from

childhood to adolescence (Chronis et al., 2007). Positive parenting during parent-child interactions between depressed mothers and children, as compared to nondepressed mothers and children, was linked to fewer conduct problems (Chronis et al., 2007). In addition, Rothbaum and Weisz (1994) examined the associations between a parent's caregiving behaviors and a child or an adolescent's externalizing behaviors in a meta-analysis. The meta-analysis revealed that a higher quality of caregiving (e.g. positive parenting) among mothers, as compared to fathers, was more closely associated with lower externalizing behaviors among children. The association between quality of caregiving among mothers and externalizing behaviors was greater for older children and adolescents than it was for toddlers and preschoolers (Rothbaum & Weisz, 1994). Furthermore, one study examined the relation between the parent-child relationship and aggressive behaviors among adolescents among an ethnically diverse sample of urban families (Orpinas et al., 1999). The study found a negative association between a positive parent-adolescent relationship and aggressive behaviors among adolescents (Orpinas et al., 1999).

The social-cognitive theory has been proposed to explain how parenting practices can mediate the relation between parental depression and adolescents' aggression (Bandura, 1977, 1985). The social-cognitive theory purports that adolescents develop and maintain aggressive behaviors through direct observation of a depressed mother's parenting behaviors (e.g. hostile, irritable, or aggressive behaviors) (Bandura, 1977, 1985; Birmaher & Axelson, 1998; Gartstein & Fagot, 2003; Hops et al., 1987; Splete, 2006). Direct observations can include observations of a depressed mother's interactions

with siblings or another parent and can consist of observations of emotional expression, emotion regulation, problem-solving strategies, and discipline strategies (Bandura, 1988; Dodge, 1990). It is hypothesized that a depressed mother serves as an influential role model for an adolescent and when an adolescent observes a depressed mother being rewarded for aggressive behaviors, the adolescent will be more likely to imitate these behaviors in the future (Downey & Coyne, 1990; Grych & Fincham, 1990). For example, the influence that a depressed mother's distress and coercive behaviors have over the behaviors of other family members may encourage and reinforce an adolescent's own use of coercive behaviors (Downey & Coyne, 1990).

According to the social-cognitive theory, negative reinforcement may play an important role in increasing aggression among adolescents of depressed mothers. Negative reinforcement is proposed to increase the frequency of an adolescent's aggressive behavior when a parent removes a negative stimulus or condition as a result of the adolescent's aggressive behaviors. It is proposed that the negative reinforcement process begins when an adolescent is confronted with coercive parenting strategies from a depressed parent (e.g. criticism). Once confronted with these parenting strategies, some adolescents respond with an aggressive reaction (e.g. temper tantrums and physical acting out). This aggressive reaction from the adolescent causes the depressed parent to retract the parental demand, therefore reinforcing the adolescent's aversive behavior (Patterson, 1982; Garstein & Fagot, 2003). Therefore, when a depressed parent responds to an adolescent's aggressive behaviors by stopping the negative interaction, the adolescent is reinforced for using aggressive behaviors to get his or her way in a situation. Research

shows that depressed mothers are more likely to try to maximize immediate rewards for the adolescent (e.g. giving in to the adolescent's demand) and minimize the amount of effort and energy expended (e.g. not spending time compromising). Hence, when an adolescent encounters conflicts in the future, the adolescent will be likely to use aggressive behaviors to deal with the conflict because it worked to eliminate the negative interaction with their depressed parents in the past (Patterson, 1982).

The social-cognitive theory and negative reinforcement theory provide a plausible explanation for the empirical research supporting the notion that parenting practices can serve as a mediator between maternal depression and adolescents' aggression. Several research studies have supported that parenting practices, particularly parental monitoring, mediate the relation between maternal depression and aggression among adolescents (Dodge, Pettit, & Bates, 1994; Dumas & Wekerle, 1995; Miller, Cowan, Cowan, Hetherington, & Clingempeel, 1993). In addition, Grant and her colleagues (2000) examined the relation between maternal depression, parenting behaviors, and psychological symptoms experienced among a sample of urban African American adolescents. Maternal depression was found to be associated with negative parenting, which was linked to an adolescent's externalizing psychological symptoms (Grant et al., 2000). Furthermore, Langrock and colleagues (2002) examined the relation between parental depression, adolescents' aggression, and parental practices among a predominantly Caucasian child and adolescent sample. Parental depressive symptoms were positively correlated with parental withdrawal and intrusiveness and parental

withdrawal and parental intrusiveness were positively associated with youth aggression (Langrock et al., 2002).

The quality of the parent-child relationship has also been found to mediate the relation between maternal depression and adolescent disruptive behavior disorder outcomes (McCarty & McMahon, 2003). One study examined the role of social support, the mother-child relationship, mother-child communication, and stressful life events in the relation between maternal depressive symptoms and adolescent disruptive behavior disorders among Caucasian and African American families. A more problematic mother-child relationship was found to provide the most parsimonious explanation for the relation between maternal depressive symptoms and adolescent disruptive behavior disorders. Differences were not found based on the race or gender of the participants (McCarty & McMahon, 2003). In another study, Miller and colleagues (1993) examined the parent-child relationship among a predominantly Caucasian sample of adolescents and depressed mothers. The study found that depressed mothers displayed less warmth and nurturing in the parent-child relationship and this predicted more adolescent externalizing behaviors. In addition, parenting warmth and structure in the parent-child relationship was found to mediate the relation between parental depression and adolescent externalizing behaviors (Miller et al., 1993). In contrast to this study, however, other research has found that a parenting characteristic, specifically emotional warmth, was not linked to adolescents' aggression (Barnow et al., 2004).

Lastly, research has indicated that a depressed mother's discipline practices can mediate the relation between maternal depression and adolescents' aggression. Several

research studies have found that depressed mothers are more likely to use physical punishment, and this is associated with antisocial behaviors, aggression, disobedience, and behavioral problems among their offspring (Deater-Deckard, Dodge, Bates, & Pettit, 1996; Larzelere, 1986; McLeod & Shanahan, 1993; Strassberg, Dodge, Pettit, & Bates, 1994; Straus, Sugarman, & Gils-Sims, 1997; Turner & Finkelhor, 1996). Robila and Krishnakumar (2006) examined the impact of maternal depression on parenting behaviors among a sample of Romanian mother-adolescent dyads. The relation between maternal depression and adolescent aggressiveness and delinquency was mediated by a mother's discipline practices. More specifically, higher levels of psychological control and more strict discipline mediated the relation between maternal depression and adolescent externalizing behaviors (Robila & Krishnakumar, 2006).

In conclusion, past research has indicated that a relation exists between maternal depression and parenting practices. More specifically, maternal depression has been linked to interpersonal difficulties, maladaptive parenting styles, and ineffective parenting techniques (e.g. Garstein & Fagot; Lovejoy et al., 2000). Research has also found that a relation exists between parenting practices and adolescents' aggression. More specifically, research has identified specific parenting practices, including maladaptive discipline practices and poor monitoring and involvement, that are associated with an adolescent's aggression (e.g. Amato & Fowler, 2002). Less research has examined the mediating influence of parenting practices in the relation between maternal depression and adolescents' aggression. The few studies that have examined this research suggest that the quality of the parent-child relationship and maternal discipline

practices are associated with aggressive outcomes among adolescents (e.g. McCarty & McMahon, 2003; Robila & Krishnakumar, 2006).

### *Maternal Depression and Family Functioning*

The role of the family unit is to provide a child or adolescent with a stable, cohesive, and predictable home environment (Cummings, Davies, & Campbell, 2000). The stability of the family unit is disrupted when events occur within the family that upset the continuity, cohesiveness, and predictability within the family (Ackerman, Kogos, Youngstrom, Schoff, & Izard, 1999; Forman & Davies, 2003). The two main areas of research related to family functioning include family discord and marital discord. Family discord consists of disruption in the relationships between parents or between the parent and the child. Marital discord has been defined as, “conflict, disharmony, and lack of parental agreement” (Reid & Crisafulli, 1990, p. 107). This includes conflict between married or separated parents, but does not include divorced parents (Reid & Crisafulli, 1990).

Similar to the research on parenting practices, research on the role of family functioning has primarily focused on studying children. Research examining children has found that several variables associated with family functioning, including family organization, family instability, and marital discord, are predictive of externalizing and aggressive behaviors among children (Ackerman et al., 1999; Harrist & Ainslie, 2008; Johnson, Cowan & Cowan, 1999). Moreover, a review of the literature found that maternal depression was associated with maladaptive family conditions (e.g. marital and family discord), which were linked to a number of problems among children, including



emotional dysregulation, aggression, and noncompliance (Gelfand & Teti, 1990). The following review of the literature primarily focuses on research on adolescents because it is most relevant to the population in the present study.

Empirical research and theoretical support for the role of family functioning has examined the relation between maternal depression and family functioning, the relation between family functioning and adolescents' aggression, and the role of family functioning as a mediator in the relation between maternal depression and adolescents' aggression. The following section focuses on two aspects of family functioning that are commonly highlighted in the literature, family discord and marital discord.

### *Family Discord*

The family systems approach has been proposed to explain the relation between maternal depression and family discord. The family systems approach purports that an adolescent's aggression cannot be understood without considering the adolescent within the context of the family unit (Hinde, 1988). Family members are interdependent on one another, and the actions of one family member influence the other members of the family. When a challenge arises in the family, the family unit is organized to cope with the challenge by adjusting to the needs of other family members. According to the family systems approach, the distress of maternal depression can impact the entire family and creates family discord and tension as the family copes with the disruption to the normative family patterns (Marriage and Family Encyclopedia, 2008).

Empirical research has found that families of depressed mothers experience higher levels of dysfunction and discord. Depressed parents have reported higher levels

of family discord and lower levels of family cohesion and organization. Research has also indicated that maternal depression is associated with conflictual family interactions and strained family communication (e.g. Sheeber & Sorensen, 1998). For example, maternal depression has been found to impact the degree of warmth and expressiveness in family relationships, such that families with a depressed mother exhibit less affection and poorer communication (Cummings, Keller, Davies, 2005; Goodman & Gotlib, 2002). In addition, children of depressed mothers have also reported experiencing greater familial stress, family discord, and family disruption, as well as decreases in family cohesion and organization (Billings & Moos, 1983, 1986; Cicchetti, Rogosch, & Toth, 1998; Coyne, 1976; Downey & Coyne, 1990; Emery, Weintraub, & Neale, 1982; Fendrich, Warner, & Weissman, 1990; Goodman & Gotlib, 1999; McCauley & Myers, 1992).

In one study, Timko and his colleagues (2002) examined family functioning among a predominantly Caucasian sample of depressed mothers and families. The study found that the families of currently depressed mothers experienced poorer family functioning, namely less family cohesiveness and more conflict, as compared to control families. In addition, Adrian and Hammen (1993) examined the impact of maternal depression among a predominantly Caucasian sample of families. The study found that children and adolescents of depressed mothers, as compared to nondepressed mothers, experienced a greater number of stressful events and conditions, including family discord (Adrian & Hammen, 1993). Another study compared home observations of family interactions in families with a clinically depressed mother and families with a nondepressed mother (Hops et al., 1987). Families with a depressed mother experienced

higher rates of aversive exchanges, including higher rates of dysphoric affect and lower rates of happy affect during interactions with their children and spouses (Hops et al., 1987).

The coercive family process model has been proposed to explain the relation between family discord and adolescents' aggression. According to the coercive family process model, coercive and dysfunctional interactions among families impact how adolescents develop and maintain relationships inside and outside the family (Patterson, 1982). Therefore, aggressive patterns of interactions that occur inside the family are also generalized by the adolescent to situations outside of the home environment. Similarly, the family interactions patterns theory holds that an adolescent's aggression is maintained because of maladaptive family interaction patterns experienced within the home (Steinglass, 1987).

Research has indicated that children and adolescents of depressed parents who experience family discord are at a higher risk for aggressive outcomes (e.g. Cummings & Davies, 1994; Downey & Coyne, 1990; Sheeber & Sorensen, 1998). A meta-analysis found that family stress predicts a problem-behavior trajectory in children, in which higher levels of tension and discord in the family are linked to problems in adolescent behavior regulation and difficulties (Cummings & Davies, 1994). Exposure to conflict within the family has also been found to be associated with emotional and behavioral problems and externalizing disorders (Emery, 1988; Hetherington, 1990). Adolescents and children who experience tense and conflictual family environments (e.g. observe arguments between family members and perceive their family as not getting along) are at

a higher risk for exhibiting acting out behaviors (Cummings & Davies, 1994; Gartstein & Fagot, 2003). In contrast, research has also found that the level of fighting behavior and family communication about violence was not predictive of adolescents' aggression (Swaim, Henry, & Kelly, 2006). In addition, Brody and Flor (1996) examined the relation between quality of family interaction and adolescent externalizing behaviors and did not find a significant association between family interaction and adolescent externalizing behaviors.

In addition to these studies, Forman and Davies (2003) examined the relation between family instability and adolescents' aggressive and delinquent behaviors in a predominantly Caucasian, middle-class sample of suburban families. Two pathways were supported for the relation between family instability and adolescent aggressive and delinquent behaviors. First, family instability was found to increase an adolescent's risk for developing aggressive and delinquent behaviors. In addition, family instability was found to predict parenting difficulties (e.g. low levels of parental warmth and lax monitoring and involvement), and parenting difficulties indirectly predicted an adolescent's aggressive and delinquent behaviors through its association with lower levels of perceived security about the family. Another study examined family functioning and child rearing practices in a predominantly Caucasian sample of male adolescent violent (higher aggressive and delinquent behaviors) and nonviolent inmates in a Russian juvenile detention center. The study revealed that a violent adolescent sample displayed significantly lower levels of family cohesion, as compared to the nonviolent adolescent sample. In addition, negative family functioning was correlated with higher levels of

aggressive behaviors among the violent adolescent sample (Ruchkin, Eisemann, Kuposov, & Hagglof, 2000). Another study examined the relation between patterns of family functioning and adolescent externalizing behaviors among urban African American and Mexican American families (Gorman-Smith, Tolan, Henry, & Florsheim, 2000). The study found that family functioning served as a protective factor against risk for adolescent externalizing among both ethnic groups. Similarly, Lopéz and her colleagues (2008) examined the influence of family environment on adolescents' aggression among a sample of Spanish families and found that a positive family environment served as a strong protective factor against the development of school aggression. However, this relation only existed among girls and not among boys (Lopéz et al., 2008).

Social learning theory has been proposed to explain the role of family functioning as a mediator in the relation between parental depression and adolescents' aggression. According to social learning theory, disturbances in the family generated by maternal depression (e.g. lack of cohesion and organization) can lead to aggressive outcomes among adolescents (Cummings & El-Sheikh, 1991; Cummings & Zahn-Waxler, 1992). This occurs when adolescents of depressed parents observe aggressive or maladaptive family interactions and behaviors (e.g. family discord or family disorganization). When the adolescent observes family members being rewarded or getting their way when using aggressive or maladaptive family interaction patterns, the adolescent is more likely to model these interactive styles and behaviors (Downey & Coyne, 1990; Grych & Fincham, 1990).

Empirical research supports the notion that family functioning accounts for the relation between parental depression and adolescents' aggression. Fendrich and his colleagues (1990) examined the relation between family risk factors, parental depression, and child and adolescent psychopathology among a predominantly Caucasian sample of families. Families with a depressed parent, as compared to families with a nondepressed parent, experienced lower levels of family cohesion, which in turn was associated with higher rates of child and adolescent conduct disorders (Fendrich et al., 1990). Davies and Windle (1997) examined gender differences in the relation between maternal depressive symptoms, family discord, and adolescent psychological adjustment (e.g. delinquent behavior and conduct problems) among a predominantly Caucasian sample of adolescents and their families. Family discord mediated the relation between maternal depression and adolescent girls' conduct problems. However, this relation did not exist among adolescent males (Davies & Windle, 1997). A 10-year longitudinal study examined the influence of family functioning in the relation between maternal depression and child psychological and behavioral problems, and health risk behavior among a sample of predominantly Caucasian families with a parent suffering from unipolar depression (Timko et al., 2002). Family functioning was found to mediate the relation between maternal depression and child outcomes among families with a mother who was more severely depressed at the start of the study, as well as among currently depressed mothers (Timko et al., 2002).

### *Marital Discord*

A second aspect of family functioning that has been linked to adolescents' aggression is marital discord. One perspective that can be used to explain the relation between maternal depression and marital discord is the interpersonal perspective. According to this perspective, the interpersonal difficulties experienced by depressed mothers can include problematic marital and family relationships, as well as dysfunctional beliefs, expectations, and behaviors about relationships (Hammen, Shih, Altman, & Brennan, 2003). This perspective argues that the psychosocial difficulties experienced by a depressed mother can strain the relationship between a depressed mother and her spouse and lead to more conflictual communication, verbal abuse, or physical abuse (Cicchetti & Toth, 1998; Dodge, 1990).

Marital discord and divorce are very common among families who have a depressed parent (Birtchnell, 1988; Cicchetti et al., 1998; Coyne, 1976; Downey & Coyne, 1990; Emery et al., 1982). Marriages of depressed mothers have been described as conflictual, tense, and hostile, and research has found that maternal depression predicts marital discord (Briscoe & Smith, 1973). In addition, depressed mothers are less likely to have stability in their marriage or experience marital satisfaction (Hammen & Brennan, 2002). Furthermore, interactions between depressed mothers and husbands have been found to be significantly more negative and less supportive than interactions between nondepressed mothers and husbands (Billings & Moos, 1985; Kowalik & Gotlib, 1987; Ruscher & Gotlib, 1988). Hammen and Brennan (2002) examined the interpersonal dysfunction experienced by a sample of currently and formerly depressed mothers and

found these women to experience lower rates of marital stability, as compared to never-depressed mothers. The study also found that formerly depressed women had poor marital satisfaction, reported more spouse coercion, had more problematic relationships with family, and reported more stressful life events related to interpersonal conflict (Hammen and Brennan, 2002).

Several theories and models have been proposed to account for the relation between marital discord and adolescents' aggression. First, the desensitization theory proposes that chronic exposure to marital discord can have a long-lasting effect on an adolescent and cause an adolescent to develop a behavioral script for using aggression. Therefore, witnessing ongoing aggressive conflict between parents can lead to subsequent use of aggression among adolescents (Bandura, 1973; Cummings & Davies, 1994). Similarly, the spillover hypothesis proposes that marital conflict can also affect the parent-child relationship. For example, coercive or aggressive behavior may be modeled by a depressed mother or her spouse and adolescents may use this type of behavior in interactions with their peers (Cowan, Cowan, Hemming & Miller, 1991; Erel & Burman, 1995; Parke & Ladd, 1992). Lastly, negative reinforcement theory proposes that an adolescent's negative behaviors, such as acting out and aggression, may be used to interrupt or serve as a distraction from marital discord. This distraction technique is reinforced when a parent stops the marital discord and directs attention to the adolescent. The interruption of the marital discord negatively reinforces the adolescent's aggressive behaviors and increases the likelihood that the adolescent will use aggression in future situations (Emery, 1989).



Several empirical research studies, beginning in the 1980s, have provided support for a relation between marital discord and problematic child adjustment and functioning (e.g. Cummings et al., 1981; Dadds, 1987; O’Leary, 1984; Emery, 1984). Research has indicated that a stronger relation has been found between marital discord and child externalizing problems, as compared to child internalizing problems (Cummings & Davies, 1994). More specifically, marital discord has been linked to aggression, conduct disorders, behavior problems, and delinquency among children and adolescents (Emery, 1982; Holden & Ritchie, 1991; Jenkins & Smith, 1991; Jouriles, Barling, & O’Leary, 1988). Furthermore, repeated exposure to marital conflict was found to be associated with higher levels of distress and anger experienced by a child (Cummings et al., 1981).

McCloskey and Lichter (2003) examined the relation between marital violence and aggression among Caucasian and Hispanic adolescents. The study found that exposure to marital violence during childhood predicted aggression toward peers among a sample of Caucasian and Hispanic adolescents. In addition, marital violence also predicted child-parent aggression (McCloskey and Lichter, 2003). Similarly, Jouriles and his colleagues (1988) found that parent-child aggression was predictive of later child conduct problems. In addition, a meta-analysis examined the relation between marital discord and youth behavior problems among a predominantly Caucasian sample of children and adolescents from lower-middle and middle class families (Reid & Crisafulli, 1990). Marital discord was found to be positively correlated with child behavior problems, and this relation was stronger for boys than for girls and among parent-report, as compared to reports from external sources (Reid & Crisafulli, 1990). Reese-Weber and

Kahn (2005) examined conflict resolution within a predominantly Caucasian sample of adolescents and their families. Parents' negative conflict resolution, such as attacking and avoidance, was predictive of an adolescent's negative conflict resolution with siblings and romantic patterns in both intact and divorced families. In another study, Andrews and his colleagues (2000) examined the relation between family conflict and later aggressive outcomes in young adult couples among a predominantly Caucasian sample of adolescents and their families. Aversive family communication was found to be predictive of aversive communication and physical aggression in adolescents' future romantic relationships. Dumas, Blechman, and Prinz (1994) examined communication effectiveness and aggression among a predominantly Caucasian sample of early adolescents. Aggressive adolescents, as compared to nonaggressive adolescents, exhibited lower levels of effective communication skills and higher levels of disruptive communication skills.

Finally, social learning theory can be used to explain the mediating role of marital discord in the relation between maternal depression and adolescents' aggression. According to social learning theory, an adolescent of a depressed mother learns aggressive behaviors that he or she witnesses or experiences during marital discord (Cummings & Davies, 1994; Emery, 1982; Bandura & Walters, 1963). After observing the effects of marital discord in ceasing conflict or getting one's way, an adolescent may model these hostile and aggressive behaviors during situations they encounter in the future (Cummings & Davies, 1994).

Empirical research has found that marital discord mediates the link between maternal depression and adolescents' aggression. In fact, research shows that children of depressed parents are at a higher risk of witnessing marital discord and are also four times more likely to develop psychopathology (Cummings & Davies, 1994; Holden & Ritchie, 1991). One study found that exposure to marital anger, violence, and hostility mediated the relation between parental depression and a child's psychological well-being (Rutter & Quinton, 1984). In another recent study, Dawson and her colleagues (2003) found that maternal depression was associated with higher rates of marital discord and stress and children of depressed mothers exhibited more behavior problems. In addition, Davies and his colleagues (1999) examined the relation between maternal depressive symptoms, marital discord, and adolescent externalizing behaviors (e.g. substance use, violation of rules and laws, aggressiveness, and disruptiveness) among a predominantly Caucasian sample. The relation between maternal depressive symptoms and adolescent externalizing problems was found to be mediated by marital discord (Davies et al., 1999). In contrast to these findings, Langrock and her colleagues (2002) examined the relation between parental depression, marital discord, and aggressive behaviors among a predominantly Caucasian child and adolescent sample. Parental depressive symptoms were positively correlated with marital discord, but marital discord was not found to be associated with youth aggression (Langrock et al., 2002).

Empirical research has also found that indicators of marital discord, such as marital satisfaction, mediate the link between maternal depression and adolescents' aggression. Hammen and her colleagues (2004) examined the relation between depressed

mothers, marital satisfaction and adolescent externalizing behaviors. Depressed mothers, as compared to nondepressed mothers, were found to experience significantly lower marital satisfaction, and marital satisfaction was found to mediate the relation between maternal depression and an adolescent's externalizing behaviors. More specifically, adolescents of depressed mothers were more likely to have an externalizing disorder when the family experienced low marital satisfaction, whereas marital satisfaction did not play a role in externalizing disorders experienced among adolescents of nondepressed mothers. In conjunction with these findings, marital status was also found to impact the relation between maternal depression and adolescent externalizing disorders (Hammen et al., 2004). Another study examined marital adjustment and parents' divorce among a sample of Caucasian families with and without a depressed parent. The study found that families with a depressed parent, as compared to families with a nondepressed parent, experienced higher rates of poor marital adjustment and parental divorce, and children and adolescents who experienced parents' divorce were more likely to be diagnosed with conduct disorder (Fendrich et al., 1990). In addition, another study examined the relation between maternal depression, the quality of the parents' relationship, and externalizing behaviors among a predominantly Caucasian, low to middle class sample of families. The study found that the relation between maternal depression and externalizing behaviors among preschoolers and adolescents was mediated by the quality of the mother's and father's relationship (e.g. couple affection and couple conflict) (Miller et al., 1993). More specifically, mothers who were currently depressed had less positive and more conflictual relations with their husbands, which in turn predicted more externalizing behaviors

among children (Miller et al., 1993). Similarly, poor marital quality has been found to mediate the relation between maternal depression and children's disruptive behavior (Emery et al., 1982).

### *Maternal Depression and Informant Discrepancy*

A third mechanism that has been proposed to account for the relation between maternal depression and an adolescent's aggression is informant discrepancy.

Researchers often collect data from multiple informants when they assess behaviors, symptoms, and psychopathology of children and adolescents (Kraemer et al., 2003).

Using multiple informants provides researchers with different perspectives of a child or adolescent's behaviors, and past research using multiple informant reports have included reports from children, parents, home observers, and teachers (e.g. Breslau, Davis, & Prabucki, 1988; Brody & Forehand, 1986; Fergusson, Horwood, Gretten, & Shannon, 1985).

One problem that researchers encounter when using multiple informants is that they often obtain discordant information from different informants (Kraemer et al., 2003). In fact, correlational estimates for cross-informant agreement average 0.13 when measuring internalizing symptoms and 0.32 when measuring externalizing behavior problems (Achenbach, McConaughy, & Howell, 1987; Hinshaw, Han, Erhardt, & Huber, 1992; Kazdin, 1994; McConaughy, Stanger, & Achenbach, 1992). The nature of the discordant reports is often that parents report higher levels of child behavior problems (e.g. aggression and attention deficit disorder) and children report higher levels of internalizing symptoms (e.g. depression) (Briggs-Gowan, Carter, & Schwab-Stone.,

1996; Edelbrock, Costello, Dulcan, Conover, & Kalas, 1986; Hodges, Gordon, & Lennon, 1990). Many early studies found that a mother's depressive symptoms affect maternal reports of externalizing behaviors (Breslau et al., 1988; Fergusson, Lynskey, & Horwood, 1993; Weissman et al., 1987). The rationale and implications of the discrepancy between a depressed mother's report and an adolescent's report of aggression has been supported in the literature by two leading theories, the depression distortion bias hypothesis and the accuracy theory.

#### *Depression Distortion Bias Hypothesis*

The depression distortion bias hypothesis has been proposed to explain how informant discrepancies across different reports of an adolescent's aggression account for the relation between maternal depression and adolescents' aggression. According to the depression distortion hypothesis, a depressed mother's cognitive patterns cause her to inaccurately over-report an adolescent's externalizing behaviors (Cummings & Davies, 1994). The depression distortion hypothesis suggests that depressed individuals have negatively biased information processing systems, meaning they hold pessimistic social cognitions and unrealistic expectations that cause them to perceive the world around them more negatively (Abramson, Seligman & Teasdale, 1978; Beck, 1976; Bower, 1981; Hamilton & Abramson, 1983; Peterson & Seligman, 1984). According to this theory, mothers suffering from depression develop a "depressive schema," in which they hold a negative bias when attending to, interpreting, and recalling events (Hedlund & Rude, 1995, p. 517). These negative cognitions shape how a depressed mother perceives and interprets her adolescent's behaviors. For example, a depressed mother may hyperfocus

on the negative aspects of an adolescent's behaviors (e.g. aggression) (Beck, Rush, Shaw, & Emery, 1979; Brody & Forehand, 1986; Dix, 1991). In addition, the depression distortion hypothesis proposes that a depressed mother's depressive schema may cause her to feel overwhelmed by her adolescent's normative behaviors and perceive normal adolescent behavior as being more aggressive or more maladaptive than it actually is (Richter, 1992). In fact, researchers have found that depressed mothers have a tendency to perceive their adolescent's behaviors as being more negative than they actually are (e.g. Radke-Yarrow, Belmont, Nottlemann, & Bottomly, 1990; Rickard Forehand, Wells, Griest, & McMahon., 1981). Research supporting this theory has also found that as depression increases among mothers, the discrepancy between maternal report and a criterion's report (e.g. adolescent or teacher) will increase (Fergusson et al., 1993).

Early research studies examining informant discrepancy questioned the validity of depressed mothers' reports of child behavior problems and proposed that a mother's depressive symptoms generated the discrepancy across multiple informant reports. Research found support for this hypothesis and found that maternal depression accounted for mothers' reports of child problems, even after accounting for criterion ratings, and this relation has been supported across longitudinal research on mother-child discrepancy (Boyle & Pickels, 1997; Brody & Forehand, 1986; Fergusson et al., 1985; Forehand et al., 1986; Forehand, Wells, McMahon, Griest, & Rogers, 1982; Graham & Stevenson, 1985; Griest, Wells, & Forehand., 1979; Moretti, Rine, Haley, & Marriage, 1985; Panaccione & Wahler, 1986; Schaughency & Lahey, 1985; Webster-Stratton, 1988).

Past empirical research examining the adolescent population has found that maternal depression impacts maternal report of an adolescent's externalizing behaviors. More specifically, maternal depression has been linked to a significant increase in the number of child externalizing symptoms reported by mothers. In addition, Kazdin and his colleagues (1983) examined the agreement between a mother's and her adolescent's reports of aggression among a predominantly Caucasian mother-adolescent sample. The study found that there was low to moderate mother-adolescent agreement on measures of the adolescent's aggression, with children providing lower estimates of aggression (Kazdin et al., 1983). Similarly, another study examined the relation between adolescent and maternal report of symptoms of aggression in a predominantly Caucasian sample of mother-adolescent dyads. Depressed mothers were found to report higher levels of aggressive symptoms than adolescents, and these levels were two to six times greater than the expected aggressive behavior rates in the normative sample. Furthermore, a mother's current depressive symptoms were found to account for a significant difference between maternal report and an adolescent's report of aggression, with maternal depression predicting a significant amount of variance in the difference between scores of an adolescent's aggression symptoms (Jaser et al., 2005). Moreover, a longitudinal study examined the relation between currently depressed mothers and mother-adolescent informant discrepancy (Najman et al., 2000). Depressed mothers, as compared to nondepressed mothers, reported higher rates of adolescent aggressive and delinquent behavior problems (e.g. conduct problems) among children and adolescents. In addition, a discrepancy was found between mothers' and adolescents' reports of behavior



problems, and these differences were associated with the mother's current depression. A relation was not found between past history of maternal depression and mother-adolescent informant discrepancy on reports of an adolescent or a child's behavior problems (Najman et al., 2000).

In contrast to these findings, a study by Andrews and her colleagues (1993) found that the nature of the informant discrepancy between a mother's and an adolescent's reports of conduct disorder was that adolescents over-reported symptoms of externalizing behaviors. Andrews and her colleagues examined mother-adolescent agreement on reports of adolescent conduct disorder among a predominantly Caucasian sample of mother-adolescent dyads. The study found that mother and adolescent agreement on the diagnosis of any conduct disorder and socialized aggressive conduct disorder was low, with adolescents reporting a greater frequency of symptoms than mothers. Andrews and her colleagues also found that adolescents were more likely to underreport socially unacceptable behavior (e.g. lying) and mothers were more likely to underreport behaviors that they are not aware of (e.g. use of a weapon).

Empirical research has also examined the informant discrepancy between a depressed mother and adolescent using an external criterion rater. Briggs-Gowan and her colleagues (1996) examined the contribution of maternal depression in discrepancies between mothers', teachers', and adolescents' reports of behavior problems in a predominantly Caucasian sample. Maternal depressive symptoms were associated with higher maternal reports of adolescent externalizing symptoms and also accounted for the small correlation found with adolescents' or teachers' reports. More specifically,

informant discrepancies between mothers' and adolescents' reports and between mothers' and teachers' reports, but not between adolescents' and teachers' reports, were related to maternal depression symptoms. This relation was only found among reports of adolescent girls' behavior problems (Briggs-Gowan et al., 1996). In addition, Fergusson (2004) found that maternal depression affected a mother's reports of her adolescent's problem behaviors among a sample of mother-adolescent dyads from New Zealand. More specifically, maternal depression was more strongly correlated with maternal reports of adolescent conduct disorder, than with teachers' or a child's reports of conduct disorder.

In conjunction with these findings, Youngstrum and his colleagues (2000) examined parents', adolescents', and teachers' reports of externalizing problems in a sample of Caucasian and African American families. Parents and adolescents were found to report significantly more externalizing behaviors than teachers. In addition, the highest agreement on symptoms of externalizing behaviors was found between parents and adolescents and the lowest agreement, particularly among African American males, was found between teachers and adolescents. When examining the impact of parental depressive symptoms, depressed parents, as compared to nondepressed parents, displayed a greater level of disagreement between parents' and adolescents' reports, as well as between parents' and teachers' reports. Therefore, the disagreement between depressed parents', adolescents', and a teachers' reports were not due to random interrater differences, but instead were correlated with a parent's depressive symptoms.

In contrast to the research supporting the depression distortion bias hypothesis, research has also found that maternal depression does not impact maternal report of an

adolescent's behaviors. Langrock and her colleagues (2002) found that parental depressive symptoms were not linked to ratings of aggression, meaning parental depression was not correlated with inflated reports of their child's aggression. In addition, Richters (1992) conducted a critical review of the literature on the relation between depressed mothers and mother-child informant discrepancy and found evidence that challenged the empirical foundation for the assumption that mothers have a distorted perception of their child's behavior problems. According to Richters (1992), depression distortion is proven when specific conditions are met. First, depressed mothers, as compared to nondepressed mothers, must be more likely to disagree with criterion ratings (e.g. child and teacher report). Therefore, depression-related differences in mother-informant agreement must be found, in conjunction with a correlation between maternal depression and maternal ratings of her child's behaviors. Second, the nature of the discrepancy must indicate that criterions' ratings of a child's behavior are more accurate than the mother's ratings. In addition, alternate explanations should be ruled out. These explanations include children of depressed mothers having higher than average rates of behavior problems and depressed mother's being more accurate raters of their child's behaviors. Therefore, if a mother's home-based ratings are compared to criterions' ratings (e.g. school-based ratings), depression distortion cannot be assumed if children manifest different behaviors at home or when strangers are present who may not be present in other contexts. A review of past literature revealed that none of the past research had met these criteria, and only 1 of 17 reviewed studies met the minimal necessary conditions (Richters, 1992). The one study that found depression-related

mother-informant discrepancy did not provide evidence for the criterion rating being superior to the mother's ratings. On the other hand, five research studies provided evidence for the accuracy theory and three studies found comparable mother-informant agreement on child behavior problems when comparing the depressed mother group and the nondepressed mother group. Therefore, this meta-analysis supports that the accuracy theory could provide a plausible explanation for informant discrepancies.

### *Accuracy Theory*

It has also been hypothesized that depressed mothers are actually more accurate reporters of their adolescent's behavior than nondepressed mothers (Conrad & Hammen, 1989; Richters & Pelligrini, 1989). According to the accuracy theory, depressed mothers are able to see their adolescents more accurately than a criterion rater because depressed mothers have a heightened awareness of their adolescent's negative behaviors and symptoms, whereas nondepressed mothers are more likely to perceive the world more positively than it actually is (Ackermann & De Rubeis, 1991; Briggs-Gowan et al., 1996; Fergusson et al., 1993). For example, a nondepressed mother may exaggerate the behaviors or attributes of her adolescent to make them appear more favorable because a nondepressed mother has a positively skewed outlook of the world. On the other hand, a depressed mother may be able to provide more accurate accounts of her adolescent's behavior because she does not hold a positive bias (Bower, 1981; Conrad & Hammen, 1989; Hamilton & Abramson, 1983; Richters & Pellegrini, 1989). According to the accuracy theory, higher rates of adolescents' aggression and behavior problems reported by a depressed mother reflect an accurate report of an adolescent's behaviors (Najman et

al., 2000). Several research studies have found that depressed mothers are equally accurate or more accurate than nondepressed mothers at reporting child behavior when comparing maternal and teacher report of a child's behaviors (Billings & Moos, 1986; Conrad & Hammen, 1989; Ivens & Rehm, 1988; Richters & Pellegrini, 1989; Weissman et al., 1987). However, there is a lack of research that has specifically examined the accuracy of a depressed mother's ratings of her adolescent's behaviors, as compared to the accuracy of a nondepressed mother's ratings of her adolescent's behaviors. Furthermore, there is also a lack of research examining the accuracy of a depressed mother's report of adolescent behaviors using unbiased outside observation of the adolescent's behaviors.

#### *Factors Impacting the Relation between Maternal Depression and Adolescents'*

##### *Aggression*

Several factors have been identified in past research as impacting the relation between maternal depression and adolescents' aggression and the three aforementioned mechanisms. It is important for future research to examine the role of these variables and investigate if and to what degree these variables may moderate the relation between maternal depression and adolescents' aggression.

*Race and Ethnicity.* The first of these variables is race and ethnicity. Researchers have debated the role of race and ethnicity in parenting and family practices, specifically whether African American families operate in the same ways as Caucasian American families (Garcia, Meyer & Brillon; Gray & Steinberg, 1999). For example, families of one ethnic group may hold different cultural meanings for parenting practices or may

face different opportunities and challenges than families of a different ethnic group. The cultural ecologies of each ethnic group may therefore influence how that ethnic group expresses, perceives, and interprets parenting behaviors and family functioning (Chao, 1994; Deater-Deckard et al., 1996; Harkness & Super, 1995; Ho, Bluestein, & Jenkins, 2008).

Race may also play a role in specific parenting practices, such as discipline. One study found that physical discipline during the first five years of life was predictive of externalizing behaviors during adolescence, and the direction of this relation varied by race (Lansford et al., 2004). Among Caucasian Americans, physical discipline early in life was predictive of higher levels of externalizing behaviors. However, among African Americans, early experiences of physical discipline were predictive of lower levels of externalizing behaviors (Lansford et al., 2004). This finding was replicated in a study by Deater-Deckard and his colleagues (1996) which found that physical discipline was linked to higher externalizing behaviors among Caucasian American children, but not among African American children.

*Gender.* Research exploring the role of gender in the relation between maternal depression and an adolescent's aggression has also displayed mixed findings (Erel & Burman, 1995; Reid & Crisafulli, 1990; Rothbaum & Weisz, 1994). For example, some studies have found that family risk factors affect youth independent of gender, whereas other research suggests that family risk factors lead to conduct problems only among boys (Cummings & Davies, 1994; Dornfield & Kruttschnitt, 1992). Research has also indicated that the gender of the parent and the adolescent plays a role in the parent-child

relationship. More specifically, boys and girls tend to be closer to their mother and spend more intimate time with their mother (Updegraff, McHale, Crouter, & Kupanoff, 2001). In addition, the gender of an adolescent influences how an adolescent interacts with his or her mother and father (Collins & Russell, 1991; Holmbeck, Paikoff, & Brooks-Gunn, 1995). Moreover, the role of gender in informant discrepancies in ratings of adolescents' aggression has displayed mixed findings. Epkins (1996) examined differences in reports of aggression between parents and adolescents and between parents and teachers among a predominantly Caucasian sample of adolescent students, parents, and teachers. The study indicated that informant discrepancies between parents' and adolescents' reports and between parents' and teachers' reports of adolescents' aggression were not significantly related associated with the gender of the adolescent. On the other hand, Lau and her colleagues (2004) examined differences in reports of adolescent psychopathology among a diverse sample of adolescents, parents, and teachers and found that gender significantly impacted informant discrepancies for across teachers', adolescents,' and parents' reports.

*Household Family Structure.* Single-mother households have been identified as a risk factor for negative outcomes among mothers and their children. Single mothers have been found to be at a higher risk for experiencing stress, depression, and physical health problems and they are more likely to live in poverty. Children and adolescents from single-mother households are more likely to suffer from mental illness, to get into trouble in school, and to experience greater difficulty getting along with their peers (e.g. more likely to engage in antisocial behaviors). Adolescents are also at a higher risk for

exhibiting increased levels of externalizing behaviors (e.g. aggressive and delinquent behavior) (O'Neill, 2002).



## Statement of the Problem

Past research has highlighted the high prevalence of depression among mothers and the negative impact this can have on adolescents' aggression. Three competing mechanisms have been presented in the literature to account for this relation. First, research suggests that parenting variables account for the relation between maternal depression and adolescents' aggression. Depressed mothers have been found to use maladaptive parenting strategies and experience a greater number of difficulties as a parent, and this has been linked to externalizing behaviors in adolescents, including aggressive and coercive behaviors (Eamon, 2001; Gartstein & Fagot, 2003; Hammen & Brennan, 2002; Weissman & Paykel, 1974). Research has also highlighted the complex processes that are unique to families with a depressed parent (Downey & Boyne, 1990). Researchers have found that maternal depression is associated with two aspects of family functioning (e.g. family discord and marital discord) that have been linked to aggressive outcomes among adolescents of depressed mothers (e.g. Billings & Moos, 1985; Cummings & Davies, 1994). Lastly, research has provided mixed findings for the role of informant discrepancies in the relation between maternal depression and adolescents' aggression, and two contrasting theories, the depression distortion bias hypothesis and

accuracy theory, have been proposed to account for the informant discrepancy (Cummings & Davies, 1994; Richters & Pelligrini, 1989).

Based on past empirical research findings and theory, the present study examined three alternative hypotheses. First, that a positive association would be found between maternal depression and adolescents' aggression, where higher levels of maternal depression would be associated with higher levels of adolescents' aggression and lower levels of maternal depression would be associated with lower levels of adolescents' aggression. Second, that the relation between maternal depression and adolescents' aggression would be a measurement artifact, such that depressed mothers would over-report an adolescent's level of aggression. More specifically, that mothers with higher levels of depression, as compared to mothers with median and low levels, would exhibit a greater discrepancy between mothers' and teachers' reports and between mothers' and students' reports of adolescents' aggression. Third, that parenting practices and family functioning would each mediate the relation between maternal depression and adolescents' aggression. Parenting practices were expected to have the most impact on adolescents' aggression, and to mediate the relation between maternal depression and adolescents' aggression over and beyond family functioning.

The present study was designed to build on the current literature and account for several important limitations of past empirical research studies. The first limitation is that few studies have examined the complexity of the specific mechanisms that may account for the relation between maternal depression and adolescents' aggression (Hammen et al., 2004). A major challenge for researchers is dealing with the transactional models,

multifinality, and multiple pathways between maternal depression and adolescents' aggression. For example, some past studies examining the relation between parents' mental illness and a child's outcomes have failed to take family factors into account (e.g. Chang, Steiner, & Ketter, 2000), whereas others have failed to account for parenting variables (e.g. Oyserman, Mowbray, Meares, & Firminger, 2000). Empirical research has also failed to examine the combined effects of these factors (e.g. Oyserman, Bybee, & Mowbray, 2002). The present study was designed to test the influence of three competing mechanisms that have been supported in the literature to account for the relation between maternal depression and subsequent aggression among adolescents. Using a cross-sectional design, this study examined the impact of parenting practices, family functioning, and informant discrepancy. A strength of the present study is that it examined reports of adolescents' aggression provided by three informants (adolescent, mother, and teacher) and reports of parenting practices and family functioning provided by two informants (adolescent and mother).

Another limitation of past research is methodological issues related to the research design. These include small sample sizes and a lack of sample diversity (Hammen et al., 2004; Webster-Stratton & Hammond, 1988). For example, past research has mostly included two-parent, Caucasian families. In addition, many studies have included clinical samples with severe depression or clinical samples in unique contexts, which limits the generalizability of the findings (Hammen et al., 2004). There has also been less research examining the role of these factors during adolescence, despite adolescence being identified as a particularly difficult time period for youth (Gelfand &

Teti, 1990). Adolescents of depressed mothers may be particularly challenged because they have been psychologically neglected by the depressed mother and are more likely to observe inappropriate modeling and poor interpersonal skills within the family (Emde, Harmon & Good, 1986; Gelfand & Teti, 1990). In order to account for these limitations, the present study used a large and ethnically diverse sample of low to middle class adolescents and their families. The sample was primarily comprised of minority families from African American and Hispanic backgrounds, but also included Caucasian families.

A further limitation of previous research has been the use of a cutoff to dichotomize participants into depressed versus nondepressed groups. This prevents an examination of the effect of maternal depression across the range of possible depression scores (Richters, 1992). This prohibits the researcher from examining the effects of varying levels of depression on adolescents' aggression, and using a depression cutoff score may limit generalizability (e.g. not generalize to more severely depressed mothers). The current study, therefore, examined depression as a continuous variable, in order to investigate the impact of various levels of depression on adolescents' aggression.

A final limitation of past research is that researchers have failed to study aggression outside of the umbrella term externalizing behaviors. Many past research studies have also failed to distinguish between depressive and aggressive behaviors in adolescents of depressed parents, and have instead collapsed the two behaviors into one construct of psychological well-being (Davis et al., 2000). It is important to examine depressive and aggressive behaviors separately because aggressive behaviors involve more conflict and are more likely to lead to a defensive reaction or counterattacks (Davis

et al., 2000). The present study specifically examined how the three aforementioned mechanisms account for the relation between maternal depression and adolescents' aggression.

Overall, the present study aimed to provide a sound research design to examine the relation between maternal depression, adolescents' aggression, and three mechanisms that research suggests mediate this relation. Its findings may have implications for violence prevention and intervention programs. The present study aimed to identify the specific mechanisms that place adolescents at a higher risk for aggression and draw attention to the most influential mechanisms that lead to aggressive outcomes in adolescents. These findings may have implications for including parents or focusing on the family unit in future interventions. Furthermore, exploring the informant discrepancies may have implications for future use of maternal reports as the primary source of information about adolescent behavior. For example, this study highlights the caution that researchers need to take when using depressed mothers' reports of adolescent behavior and symptoms in future research (Richters, 1992). Therefore, by understanding the role of parenting, family functioning, and informant discrepancy in the relation between maternal depression and adolescents' aggression, future intervention efforts can target particular mechanisms that place adolescents at a higher risk for aggression and help lead high-risk adolescents toward more positive outcomes.

## Method

### *Settings*

Data on the participants in the present study were collected as part of the Multisite Violence Prevention Project (MVPP), a four-site study designed to evaluate violence prevention programs for middle school youth (MVPP, 2004). Schools in four locations in the United States were recruited based on principals' and teachers' willingness and ability to participate in the MVPP study. These sites included Durham, North Carolina, Richmond, Virginia, Northeastern Georgia, and Chicago, Illinois. The middle schools in the sample from Durham and Richmond (eight from each site) included nearly all the public middle schools in those cities. The nine middle schools from Georgia were from six school districts in the northeastern region of Georgia. The twelve schools from Chicago included kindergarten through eighth grade students and were chosen based on a set of criteria, including size of the school, and having at least 75% of the students residing within school district boundaries. Schools within each site were randomly assigned to one of four intervention conditions: universal intervention, selective intervention, combined universal and selective intervention, and no-intervention control. The interventions were implemented to two successive cohorts of sixth grade students (see MVPP, 2004 for details).

The schools included in the study served a high percentage of students from low-income, minority students and families. About 64% of sample were eligible for free or reduced priced lunch [Durham (42%), Richmond (75%), Georgia (47%), and Chicago (96%)]. As compared to the total community poverty percentage of 16% for the United States, the four sites in the sample had the following community poverty rates: Durham (17%), Richmond (37%), Georgia (26%), and Chicago (31%). As compared to the total juvenile arrests for violent crime percentage of 43% for the United States, the four sites had the following community juvenile arrests rates for violent crimes: Durham (47%), Richmond (69%), Georgia (74%), and Chicago (63%). Lastly, the high school dropout rate for the sites was as follows: Durham (2%), Richmond (3%), Georgia (9%), and Chicago (17%) (MVPP, 2004).

### *Participants*

Participants included sixth grade students and their families that met criteria for a targeted intervention. The targeted student sample included students in each school who disproportionately contributed to rates of aggression and had a high degree of social influence among their peers. One of the intervention conditions in MVPP involved the implementation of a family intervention with these students and their families. By focusing on this high-risk group, the intervention aimed to make a larger impact on reducing overall rates of aggression and produce a positive impact on student attitudes about the acceptability of aggression.

Eligible participants were sixth grade students selected by teachers based on having high rates of aggression and a high level of potential influence on peers. This

included two successive cohorts of students who entered the sixth grade at participating schools in 2001 and 2002. The process for selecting the sample began with two core teachers from the sixth grade nominating students whom they considered to be the most aggressive sixth graders. The students were rated across a range of aggressive behaviors, including getting in physical fights, intimidating others, getting easily angered, and encouraging others to fight. Once 25% of the most aggressive students in each school were identified, the two core teachers were then asked to rate the level of influence these students have on peers. Teachers rated a student's level of influence using a 5-point social influence scale to rate the following behaviors: other students listening to them about attitudes, behavior, and values about what is important and cool; they are considered a trend-setter; other students respect them; and other students try to be like or imitate them. About 5% of sixth graders from each of two cohorts were chosen from each school, with a minimum of 10 students, with the total number of targeted students selected from each school dependent on the size of the school [Durham ( $n = 18$ ), Richmond ( $n = 19$ ), Northeastern Georgia ( $n = 18$ ), Chicago ( $n = 12$ )].

A total of 1,805 students met criteria across the four sites. About 7% of this sample was excluded from the study in accordance with a criterion to exclude students in self-contained special education classrooms. Parent consent and student assent were obtained from 69% of the eligible students ( $N = 1,237$ ), and 98% of the consented students participated in the study ( $N = 1,217$ ). The data were obtained from 1,128 caregivers of the participating students, with mothers representing 82% of the total caregiver sample. Because the present study focused on mothers' characteristics, the final



sample included only those students for whom data on mothers' reports were available ( $N = 927$ ). Table 1 presents the breakdown of the adolescents' sample characteristics by site.

Table 1

*Targeted Sample Descriptives for Adolescents*

Demographics	Chicago	Durham	Richmond	NE Georgia	Total
% Male	68	63	65	64	65
% Hispanic	54	2	5	3	15
% Black, Non-Hispanic	36	85	82	60	66
% White, Non-Hispanic	1	6	1	29	10
% Multiracial	6	5	7	6	6

Although depressed mothers were not specifically recruited for this study, nearly 40% of the mothers in the sample met criteria for experiencing a significant level of depressive symptoms (received a high score of 16 points or greater on the Center for Epidemiological Studies Depression scale for symptoms of depressed mood). The average age of the mothers in the sample was 36 years old. A large percentage of the mothers were single parents (51%), and the majority of the remainder were living with the adolescent's father (22%) or stepfather (20%). About 34% of mothers reported they were currently married. Nearly half of the sample had an annual household income below \$20,000, with only 14% reporting an income above \$50,000. About 38% of the sample was a high school graduate or had received a GED certificate, 24% had completed some high school, and 21% had completed some post high school education. A smaller proportion of the sample had completed eighth grade or less (6%) or graduated from college with an Associate or Bachelors degree (10%). Table 2 presents the breakdown of the mothers' sample characteristics by site.

Table 2

*Targeted Sample Descriptives for Mothers*

Demographics	Chicago	Durham	Richmond	NE Georgia	Total
Mean Age	37	37	36	36	36
% Meeting Criteria for Depression	43	34	42	39	39
% Two Parent Family	30	19	12	27	22
% Stepfather	17	17	20	25	20
% Single Parent	45	56	60	42	51
% Currently Married	38	32	22	43	34
% Currently Single	40	42	50	27	39
% Less than \$9,999 Income	18	20	31	22	22
% \$10,000-19,999 Income	33	22	30	21	26
% \$20,000-29,999 Income	24	19	22	18	20
% \$50,000 or higher	7	20	7	17	14
% Some High School	30	17	33	19	24
% High School Graduate/ GED Education	29	37	36	47	38
% Some Post High School	19	21	22	20	21

The racial/ethnic distribution of the mothers was 73% Non-Hispanic, African American, 14% Hispanic/Latino, and 11% White, Non-Hispanic. Table 3 presents the breakdown of the mothers' racial/ethnic distribution by site.

Table 3

*Targeted Sample Ethnicity Descriptives for Mothers*

Demographics	Chicago	Durham	Richmond	NE Georgia	Total
% Hispanic	55	1	2	3	14
% Black, Non-Hispanic	43	92	95	60	73
% White, Non-Hispanic	0	6	0	33	11
% Multiracial	2	1	2	4	2

*Procedure*

All of the procedures for the MVPP study were approved by the institutional review boards at each of the four participating universities and the CDC. Consent and

assent forms were sent home with students. At three sites, the investigators gave students a \$5 gift card for returning the forms, regardless of whether or not they participated in the study. In order to reduce attrition rates, telephone follow-up calls and home visits were used.

Data were collected from the targeted sample of sixth grade students as part of the pretest assessment for the MVPP in the fall of the 2001 for Cohort 1 and fall of 2002 for Cohort 2. A battery of outcome measures was administered to students and their families. Students were administered a computer-assisted survey interview (CASI) either in the student's home or another location that was convenient for the family. After obtaining the student's assent to participate in the interview, each student was provided with instructions about the study and given a brief tutorial on how to use the CASI system. At the completion of each interview, students were compensated with a \$5 gift card. The survey took an average of 41 minutes for each student to complete (SD = 12.3).

A caregiver for each student was administered an interview in a separate room from the student. Due to concerns about a caregiver's reading ability and inexperience with laptops, research staff read the survey questions aloud to each caregiver. Caregiver interviews took about 43 minutes to complete (SD = 13.5), and each caregiver was compensated \$30 for completing the survey.

#### *Measures*

Measures used in the current study assessed four domains: maternal depression, parenting practices, family functioning, and adolescents' aggression. The internal

consistency for the scales were assessed using the sample from Cohort 1 in the fall of 2001.

### *Maternal Depression*

*The Center for Epidemiologic Studies Depression scale (CES-D)* (Radloff, 1977) was administered to assess caregivers' level of depression. The CES-D is a 20-item self-report measure that is used to assess current levels of depressive symptoms, with an emphasis on the affective component (e.g. depressed mood). The frequency of each item is rated on a 4-point scale, ranging from 0 (*Rarely*) to 3 (*Almost all the time*). The range of scores for the CES-D is from 0 to 60 and a higher score indicates a higher level of depression. The CES-D has been used in epidemiological and clinical studies and has correlated well with other depression scales (Orme, Reis, & Herz, 1986). The scale has high internal consistency (ranging from .84 to .90) and good short-term test-retest reliability. It has also displayed good factorial validity and adequate discriminant validity (Orme et al., 1986).

### *Parenting Practices*

*Parenting Practices- Parent and Student Version* (Gorman-Smith, Tolan, Zelli & Huesmann, 1996). Parenting Practices is a self-report measure completed by both the caregiver and the student to assess a caregiver's behavior towards their children during the past 30 days, specifically discipline and monitoring. The scale was adapted from the Chicago Youth Development Study (Gorman-Smith, Tolan, & Henry, 1990), a longitudinal study of African-American and Latino male adolescents living in the inner-city and other urban-poor communities, and the schools and families in education (SAFE)

children study (Gorman-Smith et al., 2007), which targeted inner-city neighborhoods of Hispanic and African American children and families. Both of these studies were originally adapted from the Pittsburgh Youth Study (Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1989), a longitudinal study of African American and Caucasian inner-city boys. The caregiver's version consists of 42 items and the student's version consists of 33 items. The student's version contained fewer items because the caregiver version includes two additional subscales (Discipline Effectiveness and Avoidance).

The present study included the following subscale from the measure for caregivers' and students' reports, Monitoring and Involvement (12 items,  $\alpha = .80$ ). It also included two subscales from the measure for the caregiver's report: Discipline Effectiveness (5 items,  $\alpha = .77$ ) and Discipline Avoidance (4 items,  $\alpha = .67$ ). The Monitoring and Involvement subscale assesses a caregiver's involvement in daily activities and routines and knowledge about a child's whereabouts. The parent's version includes items such as, "How often do you talk to \_\_\_\_\_ about what he/she had actually done during the day?" and "In the past 30 days, how often did you listen to \_\_\_\_\_ when he/she wanted to talk to you?" Two items from this scale were excluded from the present study: "How often do you talk with \_\_\_\_\_ about his/her plans for the upcoming day?" and "How often do you talk with \_\_\_\_\_ about what he/she had actually done during the day?" These items were excluded because they reflect a global parenting behavior and do not measure specific parenting behaviors exhibited in specific situations during parent-child interaction that the present study intends to measure. The Discipline Effectiveness subscale assesses beliefs about the effectiveness of discipline

methods and includes items like, “In the past 30 days, how often was the discipline you used effective for your son/daughter?” and “In the past 30 days, if you punished \_\_\_\_\_, how often did his/her behavior get worse?” The Discipline Avoidance subscale assesses parent’s avoidance of disciplining their child and includes items such as, “In the past 30 days, how often did you hesitate to enforce the rules with \_\_\_\_\_ because you feared he/she might then harm someone in your house?” and “In the past 30 days, how often did you feel that you must be careful not to upset \_\_\_\_\_?” (Gorman-Smith et al., 1996). Respondents were asked to rate items for the Monitoring and Involvement subscale on a scales ranging from 1 (*Don’t know*) to 3 (*Within the last 30 days, but not within the last week*) to 5 (*Yesterday/today*). Items on the Discipline Effectiveness and Discipline Avoidance scale were rated on a scale ranging from 1 (*Almost never*) to 5 (*Almost always*).

### *Family Functioning*

*Family Relationship Scale- Parent and Student Version* (Gorman-Smith et al., 1996). The Family Relationship Scale measures family relationship characteristics that place adolescents at risk for developing antisocial behavior and includes caregivers’ reports (38 items) and students’ reports (39 items) and was originally developed for use with low-income, urban families. The present study included the following two subscales from the measure for the caregivers’ and students’ reports: Structure (caregiver  $\alpha = .74$ ; student  $\alpha = .70$ ), Cohesion ( $\alpha = .84$ ;  $\alpha = .87$ ). The Structure subscale assesses family organization and support for family members and include items such as, “My family expects too much of me” and “It is hard to identify the leader(s) in our family.” The

Cohesion subscale assesses family communication and closeness and includes items like, “Family members like to spend free time with each other” and “Family members feel very close to each other.” Respondents were asked to rate items for the Structure and Cohesion subscales on a scale ranging from 1 (*Not at all true*) to 4 (*Almost always or always true*).

*Reactivity in Family Communication* (Henry, Keys, Chertok, & Jegerski, 1990). The Reactivity in Family Communication scale is a 3-item measure that assesses the extent to which parents and children perceive that emotional states experienced by one person in a family spread easily to other family members (caregiver  $\alpha = .66$ ; student  $\alpha = .58$ ). It includes items, such as, “We interrupt one another when we talk or argue.” Items chosen for the scale were based loosely on items developed by Henry et al. (1990) and used by the Metropolitan Area Child Study (Metropolitan Area Child Study Research Group, 2002). For each item, the respondent was asked use a 4-point rating scale ranging from 0 (*Never*) to 4 (*Almost always*) to indicate the frequency of reactivity in family communication.

#### *Adolescents' aggression*

*The Problem Behavior Frequency Scales (PBFS)* (Farrell, Kung, White, & Valois, 2000). The PBFS is a 44-item self-report measure that consists of seven scales that assess the frequency of problem behaviors, including aggression (physical, non-physical, and relational), victimization (overt and relational), drug use, and delinquency. The items in PBFS were adapted from Farrell and colleagues (2000). For each item, the respondent is asked to indicate how frequently a particular problem behavior has occurred in the past

30 days using a 6-point rating scale ranging from 1 (*Never*) to 6 (*20 or more times*). A higher score on this scale indicates higher levels of problem behavior. The present study included items from the Physical Aggression subscale ( $\alpha = .80$ ). It includes items, such as, “Been in a fight in which someone was hit” and “Threatened someone with a weapon.” The present study also used items from the Nonphysical Aggression subscale ( $\alpha = .79$ ), which includes items, such as, “Teased someone to make them angry” and “Picked on someone.” Because the PBFS was measured in different units than teachers’ and mothers’ measures of aggression, a linear transformation was used to rescale scores on this measure to have the same mean and standard deviation as the teachers’ reports of aggression.

*Behavior Assessment System for Children – Parent Rating Scales for Adolescents (BASC-PRS-A)* (Reynolds & Kamphaus, 1992). The BASC-PRS-A is a parent measure of problem behaviors among students that consists of 11 scales. For the current study, the Aggression (10 items) subscale was used. This subscale includes parent-report of the adolescent’s tendency to act in a hostile and threatening manner (either verbal or physical). For each item, the respondent is asked to rate the adolescent’s behavior during the past six months, using a 4-point rating scale ranging from 0 (*Never*) to 3 (*Almost Always*). The BASC-PRS-A has been normed on a nationally representative sample of four areas in the United States that included 1090 parents of adolescents (ages 12 to 18). The internal consistency reliabilities (alpha) for the general norm samples was .82 for Aggression. The test-retest reliabilities for the Aggression subscale over a one month



period for the general norm samples was .58, and the internal consistency for the sample was .85.

*Behavior Assessment System for Children – Teacher Rating Scales for Adolescents (BASC-TRS-A)* (Reynolds & Kamphaus, 1992). The BASC-TRS-A is a teacher measure of problem behaviors among students that consists of 138 items and 13 scales. The BASC-TRS-A was completed by core teachers in each school and included the Aggression subscale (14 items). This subscale is comprised of identical items found on the BASC-PRS-A, but includes an additional 2 items. These additional items were removed from the analyses to make the teacher's report identical to the parent's report. The BASC-TRS-A has been normed on a nationally representative sample of four areas in the United States. The internal consistency reliabilities (alpha) for the general norm samples was .95 for the Aggression subscale, and the test-retest reliabilities over a one month period for the general norm samples was .86. The internal consistency for the sample was .85 for the Aggression subscale.

#### *Demographics*

*Family Demographics.* The Family Demographics is a parent-report measure that included the following variables: gender of the caregiver and student, having an adult male in the home, race, and ethnicity.

#### *Analyses*

First, descriptive statistics were calculated to examine the distribution properties of each scale and to detect any outliers. Correlations among the parenting practices and family functioning subscales were also calculated to determine if it was appropriate to

create composite measures. Next, a within-subjects analysis of variance (ANOVA) was used to examine the association between maternal depression and informant discrepancy. Source of the report of adolescents' aggression (mother, teacher, and student) was included as a within-subjects factor, gender was included as a between-subjects factor, and maternal depression was included as a covariate. Tests of individual contrasts were used to compare mothers' to teachers' reports and mothers' to students' reports, and the interactions between these contrasts and gender and maternal depression were also assessed.

Finally, mediational analysis were conducted using structural equation modeling (SEM) to examine the underlying mechanisms (parenting practices and family functioning) that are hypothesized to mediate the relation between the independent variable, maternal depression, and the dependent variable, adolescents' aggression. Three subscales defined the mediating variables for parenting practices (monitoring and involvement, discipline effectiveness, and discipline avoidance) and family functioning (structure, cohesion, and reactivity in family communication), and mediation was evaluated using four guidelines developed by Baron and Kenny (1986). First, a significant relation must exist between the independent variable, maternal depression, and the dependent variable, adolescents' aggression, in order to demonstrate that maternal depression has an affect on adolescents' aggression. Second, a significant relation must exist between maternal depression and each mediating variable (monitoring and involvement, discipline effectiveness, discipline avoidance, structure, cohesion, and reactivity in family communication). This shows that maternal depression has an impact

on the mediating variables in the model. Next, when maternal depression is controlled for, each mediating variable must be significantly related to the dependent variable. If this relation does not exist, the mediator does not carry the effects of maternal depression to adolescents' aggression. Finally, after an adjustment is made for each mediator in the model, the relation between maternal depression and adolescents' aggression should not be significant. However, Baron and Kenny (1986) argued that evidence of partial mediation between an independent variable and dependent variable should not discount the mediation. For example, if the relation between the independent variable and the dependent variable is larger before the mediating variables are partialled out, this can provide evidence for mediation (Baron & Kenny 1986). MacKinnon (2008) argued that the magnitude and significance of the indirect effects are most critical to the mediation model. He argued that finding a significant relation between an independent variable and dependent variable before the mediators are added to the model or having an insignificant relation between an independent variable and dependent variable after the mediators are added to the model are not essential for displaying mediation.

The model in the present study used path coefficients to examine the extent to which the relation between maternal depression and adolescents' aggression is explained by monitoring and involvement, discipline effectiveness, discipline avoidance, structure, cohesion, and reactivity in family communication. Path coefficients reflect the size of the relation between variables, and a mediator pathway is determined by calculating the product of the path coefficients in the "chain of mediation" (MacKinnon, 2008, p. 30).

The size of the mediated effect for each mediator variable reflects how a 1 unit of change

in maternal depression affects adolescents' aggression indirectly through each mediating variable (MacKinnon, 2008).

Path diagrams that represent the hypothesized relations are depicted in Figure 1. The results of the within-subjects ANOVA were used to determine if it is necessary to use separate measures based on caregivers' and adolescents' reports of adolescents' aggression or if it was appropriate to use a composite report (see Figure 1). The SEM model controlled for the effects of gender, ethnicity/race, and household family structure on aggression.

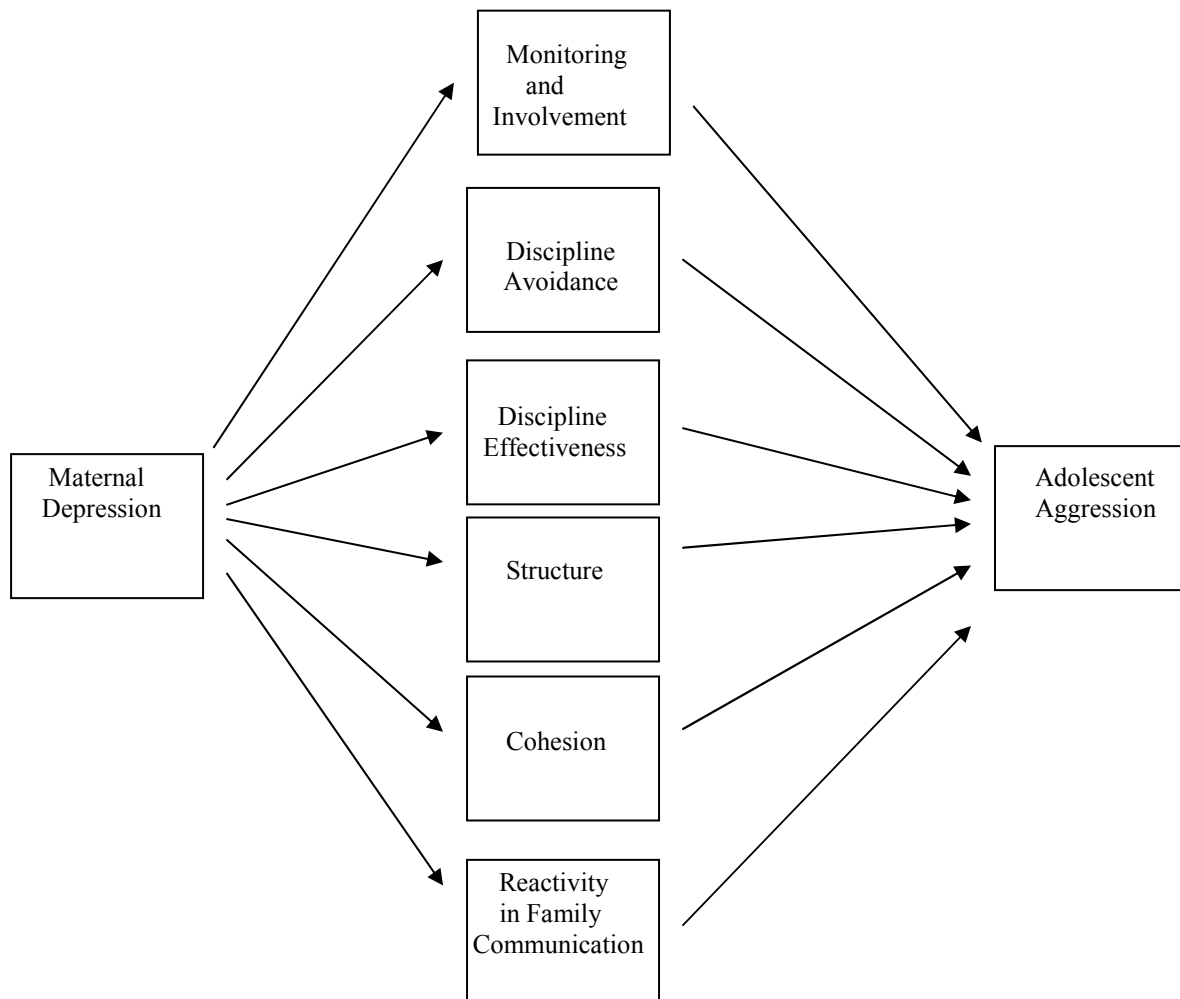


Figure 1. Hypothesized pathways.

## Results

### *Preliminary Analyses*

The means and standard deviations for all scales used in the present study are reported in Table 4. Ratings of aggression ranged from 0 to 3, and higher scores indicate higher levels of aggression. Maternal depression was measured using the Center for Epidemiological Studies Depression scale, and ratings for the scale ranged from 0 to 60. A higher score indicates a higher level of depression and a rating of 16 points or greater indicates a significant level of depressive symptoms. Ratings for the Structure and Cohesion subscales ranged from 1 to 4 and higher scores indicate higher levels of family functioning. Ratings for the Reactivity in Family Communication subscale ranged from 0 to 4, and higher scores indicate lower levels of family functioning. Lastly, ratings of the Monitoring and Involvement, Discipline Effectiveness, and Discipline Avoidance subscales ranged from 1 to 5. A higher score indicates a greater frequency of parenting practices.

Table 4

*Means and Standard Deviations for all Scales in the Present Study*

Scale	Mean	SD	N
Aggression (teacher rating)	1.11	0.66	862
Aggression (student rating)	1.11	0.66	886
Aggression (mother rating)	0.88	0.53	917
Maternal Depression (mother)	14.73	10.69	913
Structure (mother)	1.65	0.44	914
Structure (student)	1.88	0.54	897
Cohesion (mother)	3.20	0.48	915
Cohesion (student)	3.05	0.67	897
Reactivity in Family Communication (mother)	2.89	0.82	909
Reactivity in Family Communication (student)	2.00	1.01	904
Monitoring and Involvement (mother)	4.30	0.55	916
Monitoring and Involvement (student)	3.77	0.83	899
Discipline Effectiveness (mother)	4.15	0.86	914
Discipline Avoidance (mother)	1.59	0.79	913

Correlations between maternal depression and adolescents' aggression are reported in Table 5. As hypothesized, there was a positive association between maternal depression and adolescents' aggression based on mothers' reports,  $r = .25, p < .001$ , teachers' reports,  $r = .11, p < .05$ , and students' reports,  $r = .09, p < .05$ .

Table 5

*Correlations between Maternal Depression and Reports of Adolescents' Aggression*

Scale	1	2	3	4
1. Aggression (teacher rating)	-			
2. Aggression (student rating)	0.19**	-		
3. Aggression (mother rating)	0.26**	0.14**	-	
4. Maternal Depression	0.11*	0.09*	0.25**	-

Note. N ranged from 862 to 917 due to missing data

\* $p < .05$ , \*\* $p < .001$

Correlations among the parenting practices and family functioning subscales were examined to determine if measures of related constructs and measures of the same

construct obtained from different sources were sufficiently high to justify creating composite measures (see Table 6). The correlations were evaluated using standards set by Pallant (2007), where correlations between .10 and .29 in absolute value are considered *small*, those between .30 and .49 are considered *medium*, and those above .50 are considered *large*. With one exception, correlations were in the small to medium range ( $|r|s = .01$  to  $.49$ ; see Table 6). The one exception was the correlation between Discipline Effectiveness and Discipline Avoidance,  $r = -.50, p < .05$ . Correlations between mothers' and students' reports on the same dimension were also small to medium ( $|r|s = .05$  to  $.23$ ). The correlations among constructs and across sources did not appear sufficiently large to justify the construction of composites. Analyses were therefore conducted on individual variables.

#### *Informant Discrepancy*

Informant discrepancies were examined in a within-subjects analysis of variance (ANOVA) that included source (teachers', students', and mothers' reports) as a within-subjects factor, gender as a between-subjects factor, and maternal depression as a covariate. Follow-up analyses of a significant main effect for source,  $F(2, 1658) = 31.07, p < .001$ , indicated that mothers' ratings were significantly lower than both students' and teachers' reports. Individual contrasts comparing mothers' to teachers' reports and mothers' to students' reports indicated that mothers' ratings were significantly lower than teachers' ratings,  $F(1, 829) = 50.88, p < .001$ , and students' ratings,  $F(1, 829) = 50.46,$

Table 6

*Correlation Matrix of Mothers' and Students' Reports of Family Functioning and Parenting Practices Subscales*

Subscales	1	2	3	4	5	6	7	8	9	10
<u>Mothers' reports</u>										
1. Structure	--									
2. Cohesion	-0.27**	--								
3. Reactivity in Family Communication	0.36**	-0.22**	--							
4. Monitoring and Involvement	-0.22**	0.40**	-0.16**	--						
5. Discipline Effectiveness	-0.40**	0.29**	-0.27**	0.40**	--					
6. Discipline Avoidance	0.37**	-0.20**	0.17**	-0.20**	-0.50**	--				
<u>Students' reports</u>										
7. Structure	0.08*	-0.01	0.01	-0.06	-0.11*	0.06	--			
8. Cohesion	-0.07	0.13**	-0.09**	0.13*	0.15*	-0.10*	0.11*	--		
9. Reactivity in Family Communication	0.09*	-0.01	0.08*	-0.05	-0.10*	0.06	0.30**	-0.03	--	
10. Monitoring and Involvement	-0.03	0.11**	-0.07*	0.23**	0.15**	-0.11**	-0.08*	0.50**	-0.08*	--

Note. N ranged from 897 to 916 due to missing data

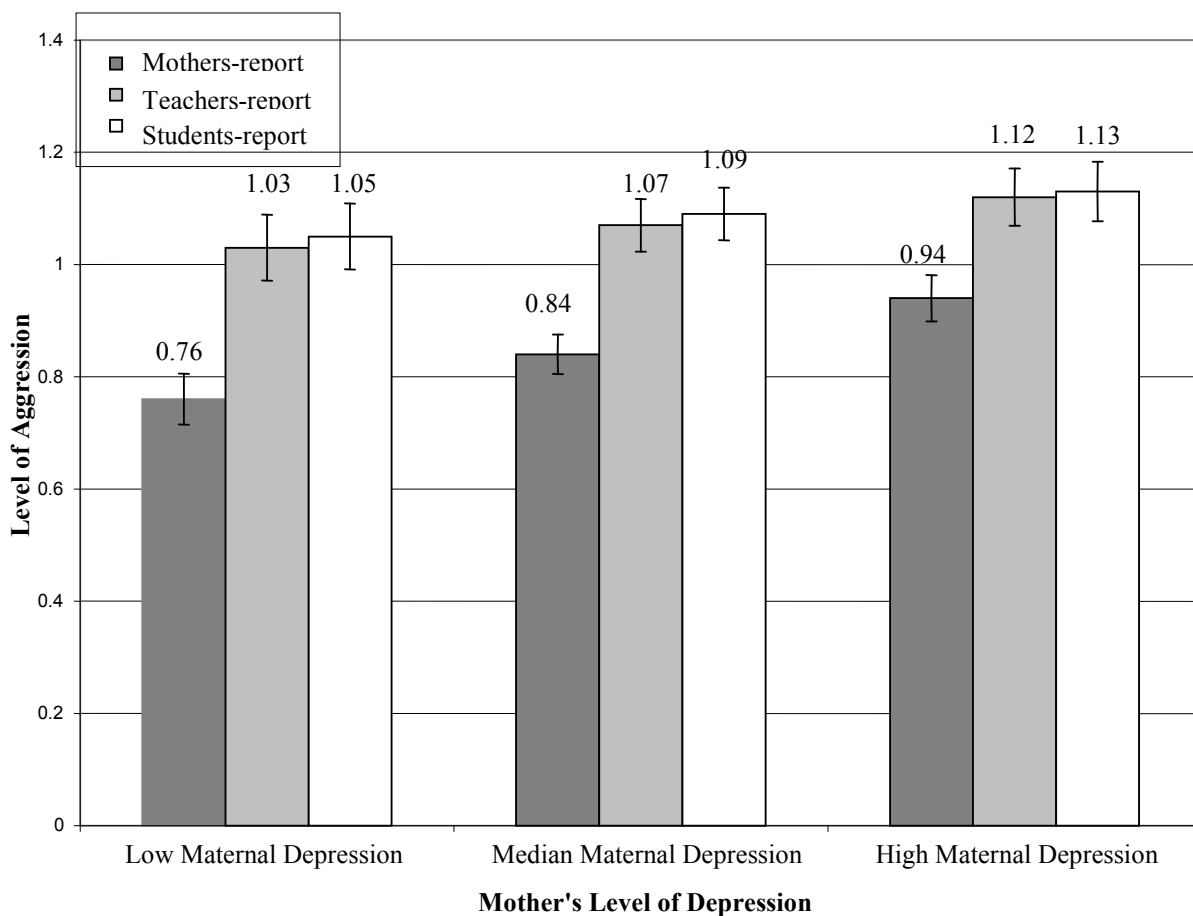
\*p < .05, \*\*p < .001



$p < .001$ . Note that mean differences between mothers' and students' reports are not meaningful because students' reports of aggression were rescaled to have a similar metric as teachers' reports of aggression.

Maternal depression was significantly related to adolescents' level of aggression,  $F(1, 859) = 36.33, p < .001$ , such that adolescents with a mother reporting high levels of depression were rated as more aggressive than adolescents with a mother reporting low or median levels. Tests of within-subjects contrasts indicated a significant interaction between maternal depression and source,  $F(2, 1658) = 4.40, p < .05$ , such that the degree of difference across sources varied as a function of maternal depression. Maternal depression moderated the degree of the discrepancy between mothers' and teachers' reports,  $F(1, 829) = 6.97, p < .05$ , and between mothers' and students' reports,  $F(1, 829) = 7.31, p < .05$ . More specifically, results indicated that mothers with low levels of depression (25th percentile), as compared to mothers with median and high levels (50th and 75th percentile) of depression, had a greater discrepancy between mothers' and teachers' reports and between mothers' and students' reports (See Figure 2).

Gender was significantly related to adolescents' level of aggression,  $F(1, 859) = 12.16, p < .001$ , such that male adolescents were rated as more aggressive than female adolescents. The degree of difference across sources did not vary as a function of gender,  $F(2, 1658) = 1.86, p = .16$ . This means that differences between mothers', teachers', and adolescents' ratings of adolescents' aggression were similar for ratings of female and male adolescents (see Table 6).



*Figure 2.* Mean ratings of adolescents' aggression as rated by mothers, teachers, and students at low (25th percentile), median (50th percentile), and high levels (75th percentile) of maternal depression. Error bands indicate 95% confidence intervals

### *Mediation*

Structural equation modeling (SEM) was used to examine the underlying mechanisms (parenting practices and family functioning) that were hypothesized to mediate the relation between maternal depression and adolescents' aggression. Four models were examined. Each controlled for gender, race/ethnicity, and having a male adult present in the home. Separate analyses were conducted to examine the effects of parenting practices (monitoring and involvement, discipline effectiveness and discipline

avoidance) and family functioning (structure, cohesion, and reactivity in family communication). The parenting practices model included mothers' reports of monitoring and involvement, discipline effectiveness and discipline avoidance, and students' reports of monitoring and involvement. Students' reports of discipline effectiveness and discipline avoidance were not included in the model because discipline effectiveness and discipline avoidance measures were not completed by students. The family functioning models were tested separately for mothers' and students' measures of the family functioning variables (structure, cohesion, and reactivity in family communication), and a combined model included both mothers' and students' reports of family functioning.

Standardized path coefficients reflecting the size of the relations among the variables depicted in each model are reported in figures 3 to 6. The direct and indirect effects of each model are reported in tables 7 to 10. The percentage of the total effect accounted for by the indirect effects through parenting or family functioning variables was determined by dividing the sum of all indirect effects by the total effect of maternal depression on ratings of adolescents' aggression for each source. Note that fit indices were not calculated because the models are fully saturated (e.g. there are no degrees of freedom).

#### *Parenting Practices as a Mediator of Maternal Depression on Adolescents' aggression*

The first model was based on mothers' and students' reports of parenting practices (monitoring and involvement, discipline effectiveness, and discipline avoidance) as mediators of the relation between maternal depression and adolescents' aggression (see Figure 3). Within this model, maternal depression had significant effects

in the expected direction on three of the four mediators, mothers' reports of monitoring and involvement practices ( $\beta = -.24, p < .001$ ), mothers' reports of discipline effectiveness ( $\beta = -.36, p < .001$ ), and mothers' reports of discipline avoidance ( $\beta = .33, p < .001$ ). The effect of maternal depression on students' reports of monitoring and involvement was not significant ( $\beta = -.06, p = .12$ ). Three of the four parenting practices variables had significant effects on at least one measure of aggression. Students' reports of monitoring and involvement were significantly related to teachers' reports of adolescents' aggression ( $\beta = -.09, p < .05$ ) and students' reports of adolescents' aggression ( $\beta = -.15, p < .001$ ), whereas mothers' reports of monitoring and involvement were significantly related to teachers' reports of adolescents' aggression ( $\beta = .06, p < .05$ ). Discipline effectiveness was significantly related to teachers' reports of adolescents' aggression ( $\beta = -.18, p < .001$ ), students' reports of adolescents' aggression ( $\beta = -.11, p < .05$ ), and mothers' reports of adolescents' aggression ( $\beta = -.44, p < .001$ ). There were no significant paths found from discipline avoidance to reports of aggression (see Figure 3). All of the significant pathways were in the expected direction, such that a negative association was found between monitoring and involvement and adolescents' aggression and between discipline effectiveness and adolescents' aggression.

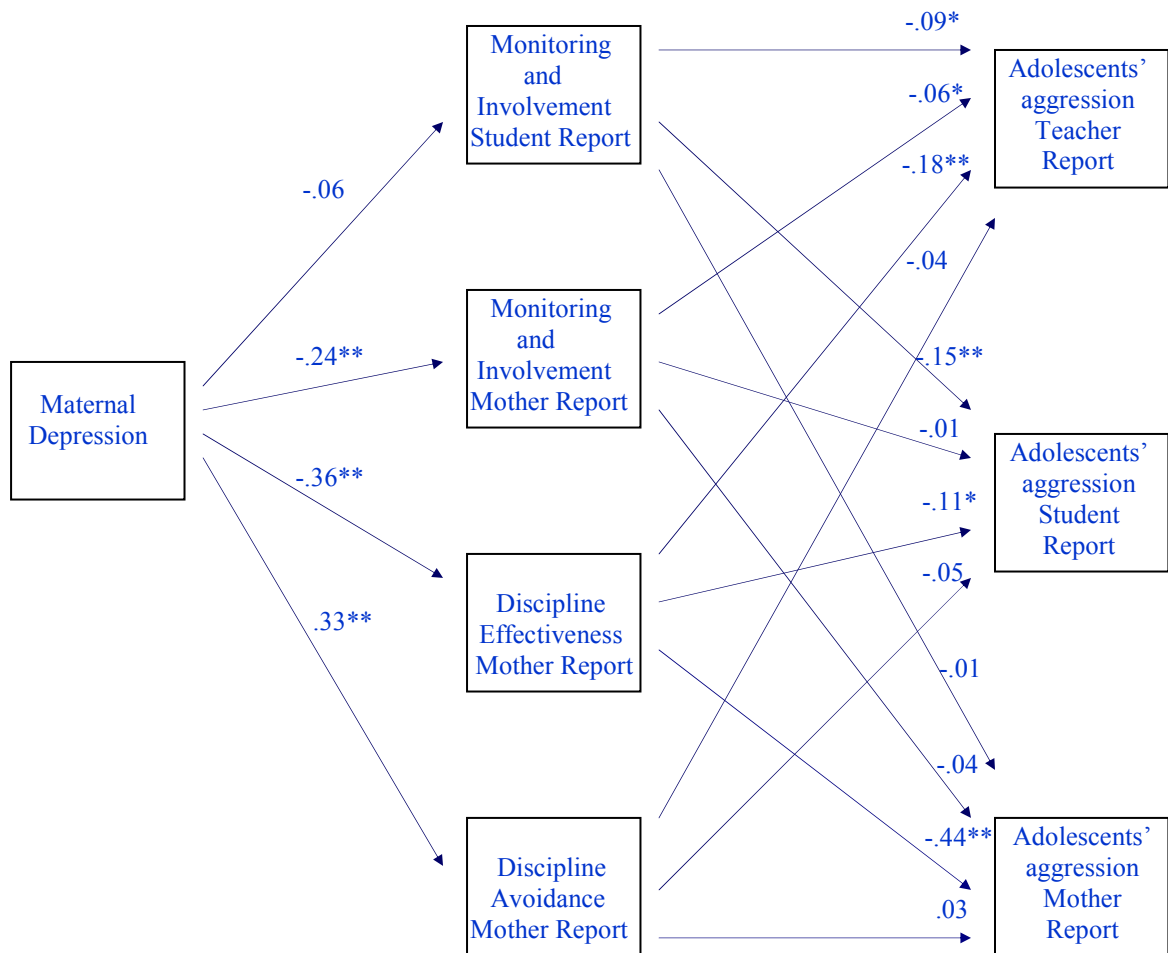


Figure 3. Path model representing the relation between maternal depression and adolescents' aggression, as mediated by mothers' and students' reports of monitoring and involvement and mothers' reports of discipline effectiveness and discipline avoidance. Values are standardized path coefficients. \* $p < .05$ , \*\* $p < .001$

Maternal depression had a significant total effect on teachers' reports of adolescents' aggression ( $\beta = .09, p < .05$ ), students' reports of adolescents' aggression ( $\beta = .08, p < .05$ ), and mothers' reports of adolescents' aggression ( $\beta = .26, p < .001$ ) (see Table 7).

There was a significant indirect effect through parenting practices from maternal depression to teachers', students', and mothers' reports of adolescents' aggression. The

indirect effect through parenting practices accounted for 44%, 50%, and 69% of the total effect of maternal depression on teachers' reports, students' reports, and mothers' reports of adolescents' aggression, respectively (see Table 7). As indicated in Table 7, the indirect effect was mostly accounted for by discipline effectiveness. The strongest indirect effect through parenting practices was found from maternal depression to mothers' reports of adolescents' aggression. The direct effect of maternal depression was significant for mothers' reports of adolescents' aggression, but was not significant for teachers' or students' reports of adolescents' aggression. R-squared values also indicated that the model accounted for a higher percentage of variance in mothers' reports, compared to teachers' and students' reports (see Table 7).

Table 7

*Mothers' and Students' Reports of Parenting Practices: Indirect Effects, Direct Effects, Total Effects, and R-squared for Predictors of Aggression*

Effects	Teachers' reports	Students' reports	Mothers' reports
Indirect Effect			
Via Monitoring and Involvement (Mother)	0.01	0.01	0.01
Via Monitoring and Involvement (Student)	-0.02	0.00	0.00
Via Discipline Effectiveness (Mother)	0.07**	0.04*	0.16**
Via Discipline Avoidance (Mother)	-0.01	-0.02	0.01
Total Indirect Effect of Parenting Practices	0.04*	0.04*	0.18**
Direct Effect of Maternal Depression	0.05	0.05	0.08*
Total Effect of Maternal Depression	0.09*	0.08*	0.26**
% Indirect Effect	44%	50%	69%
R-squared	0.06**	0.04**	0.28**

\* $p < .05$ , \*\* $p < .001$

*Family Functioning as a Mediator of Maternal Depression on Adolescents' aggression*

The second model was based on mothers' reports of family functioning (structure, cohesion, and reactivity in family communication) as mediators of the relation between

maternal depression and adolescents' aggression (see Figure 4). Within this model, maternal depression had significant effects in the expected direction for two of the three mediators, including mothers' reports of cohesion ( $\beta = -.32, p < .001$ ) and reactivity in family communication ( $\beta = .32, p < .001$ ). Significant effects were not in the expected direction for one of the three mediators, structure ( $\beta = .52, p < .001$ ), such that there was a positive association between maternal depression and structure. Two of the three mediators had significant effects on students' or mothers' reports of adolescents' aggression. Mothers' reports of cohesion were significantly related to students' reports of adolescents' aggression ( $\beta = -.07, p < .05$ ), and mothers' reports of reactivity in family communication were significantly related to students' reports of adolescents' aggression ( $\beta = .08, p < .05$ ) and mothers' reports of adolescents' aggression ( $\beta = .21, p < .001$ ). There were no significant paths from structure to teachers', students', mothers' reports of adolescents' aggression (see Figure 4). The significant paths from cohesion and reactivity in family communication to reports of adolescents' aggression were in the expected direction, such that there was a negative association between adolescents' aggression and cohesion and a positive association between reactivity in family communication and adolescents' aggression.

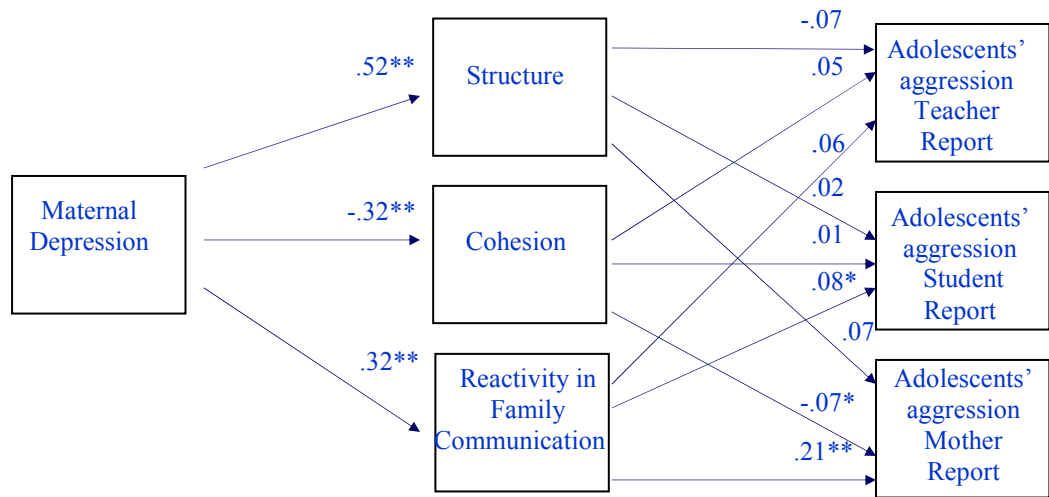


Figure 4. Path model representing the relation between maternal depression and adolescents' aggression, as mediated by mothers' reports of structure, cohesion, and reactivity in family communication.

Values are standardized path coefficients.

\* $p < .05$ , \*\* $p < .001$ .

As in the previous model, maternal depression had a significant total effect on teachers' reports ( $\beta = .13, p < .001$ ), students' reports ( $\beta = .08, p < .05$ ), and mothers' reports of adolescents' aggression ( $\beta = .13, p < .001$ ), (see Table 8). A significant indirect effect through mothers' reports of family functioning was found from maternal depression to mothers' reports of adolescents' aggression, but not for students' or teachers' reports of adolescents' aggression. The indirect effect through mothers' reports of family functioning accounted for 50% of the total effect of maternal depression on mothers' reports of adolescents' aggression, and reactivity in family communication accounted for the largest proportion of the indirect effects (see Table 8). This indicates that the strongest indirect effect through family functioning was found from maternal depression to mothers' reports of adolescents' aggression. The direct effect of maternal depression was significant for teachers' and mothers' reports of adolescents' aggression,



but was not significant for students' reports of adolescents' aggression. R-squared values indicated that mothers' reports of adolescents' aggression, as compared to students' and teachers' reports, accounted for the largest percent of variance explained in the model (accounted for 15% of the variance in the family functioning model).

Table 8

*Mothers' Report of Family Functioning: Indirect Effects, Direct Effects, Total Effects, and R-squared Table for Predictors of Aggression*

Effects	Teachers' reports	Students' reports	Mothers' reports
Indirect Effect			
Via Cohesion	-0.04	0.01	0.04
Via Structure	-0.02	0.00	0.02*
Via Reactivity in Family Communication	0.02	0.03	0.07**
Total Indirect Effect of Family Functioning	-0.03	0.03	0.13**
Direct Effect of Maternal Depression	0.10**	0.05	0.13**
Total Effect of Maternal Depression	0.13**	0.08*	0.26**
% Indirect Effect	23%	38%	50%
R-squared value	0.05**	0.03*	0.15**

\* $p < .05$ , \*\* $p < .001$

A similar model was tested for students' reports of family functioning (structure, cohesion, and reactivity in family communication) as mediators in the relation between maternal depression and adolescents' aggression (see Figure 4). Within this model, maternal depression did not have significant effects on any of the mediators, but significant effects on adolescents' aggression were found for each of the three mediators. Students' reports of structure were significantly related to mothers' reports of adolescents' aggression ( $\beta = .07, p < .05$ ), and students' reports of cohesion were significantly related to teachers' reports ( $\beta = -.08, p < .05$ ), students' reports ( $\beta = -.20, p$

<.001), and mothers' reports of adolescents' aggression ( $\beta = -.10, p <.05$ ). Finally, students' reports of reactivity in family communication were significantly related to teachers' reports of adolescents' aggression ( $\beta = .11, p <.05$ ) and students' reports of adolescents' aggression ( $\beta = .17, p <.001$ ) (see Figure 5). The significant paths from cohesion and reactivity in family communication to reports of adolescents' aggression were in the expected direction, such that a negative association was found between cohesion and adolescents' aggression, and a positive association was found between reactivity in family communication and adolescents' aggression. The significant path from structure to reports of adolescents' aggression was not in the expected direction, such that a positive association was found between structure and adolescents' aggression.

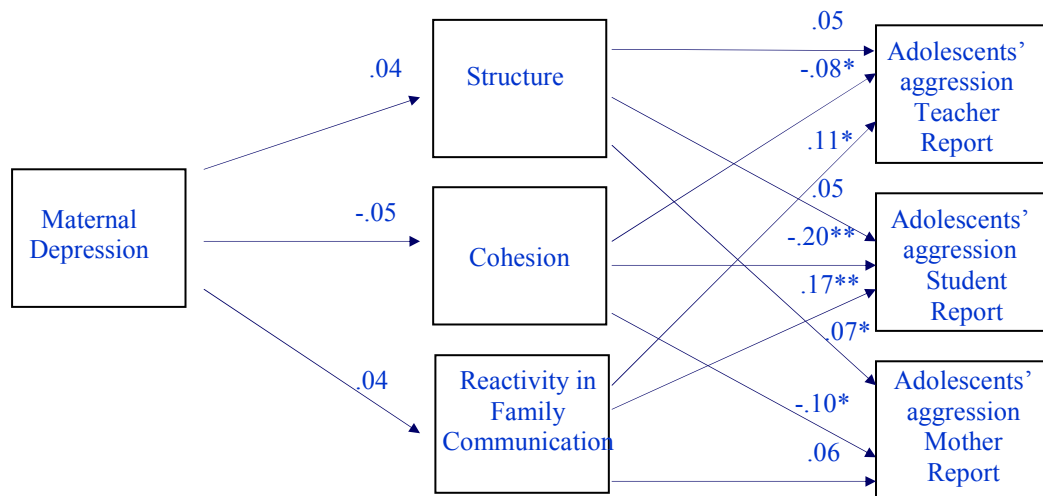


Figure 5. Path model representing the relation between maternal depression and adolescents' aggression, as mediated by students' reports of structure, cohesion, and reactivity in family communication.

Values are standardized path coefficients.

\* $p <.05$ , \*\* $p <.001$ .

Consistent with the previous model, maternal depression had a significant total effect on mothers', students', and teachers' reports of adolescents' aggression (see Table 9). There

was a significant indirect effect through family functioning from maternal depression to mothers' reports of adolescents' aggression, but not to teachers' or students' reports of adolescents' aggression. The indirect effect through mothers' reports of family functioning significantly accounted for 4% of the total effect of maternal depression on mothers' reports of adolescents' aggression (see Table 9). The direct effect of maternal depression was significant for mothers' and teachers' reports of adolescents' aggression, but was not significant for students' reports. As reported in Table 9, the model accounted for a higher percentage of the variance in mothers' reports of adolescents' aggression than for teachers' and students' reports.

Table 9

*Students' Report of Family Functioning: Indirect Effects, Direct Effects, Total Effects, and R-squared Table for Predictors of Aggression*

Effects	Teachers' reports	Students' reports	Mothers' reports
Indirect Effect			
Via Cohesion	0.00	0.01	0.00
Via Structure	0.01	0.00	0.01
Via Reactivity in Family Communication	0.00	0.03	0.00
Total Indirect Effect of Family Functioning	0.01	0.03	0.01*
Direct Effect of Maternal Depression	0.08*	0.05	0.25**
Total Effect of Maternal Depression	0.09*	0.08*	0.26**
% Indirect Effect	11%	38%	4%
R-squared value	0.06**	0.03*	0.11**

\* $p < .05$ , \*\* $p < .001$

The final model included both mothers' and students' reports of family functioning (structure, cohesion, and reactivity in family communication) as mediators of the relation between maternal depression and adolescents' aggression. Within this model, maternal depression had significant path effects on mothers' reports of structure ( $\beta = .52$ ,

$p < .001$ ), cohesion ( $\beta = -.32, p < .001$ ), and reactivity in family communication ( $\beta = .32, p < .001$ ). Maternal depression did not have significant path effects on students' reports of structure, cohesion, or reactivity in family communication.

Overall, the indirect effects through family functioning in the final model (see Table 10) are similar to the indirect effects in the previous models it subsumes (see tables 8 and 9). With one exception, this indicates that similar indirect effects through mothers' and students' reports of family functioning are displayed independent of whether they are in separate or combined models. The one exception is teachers' reports of structure, which was found to have a significant indirect effect in this model but not in previous models. Table 10 also shows that this model accounts for a greater percent of the indirect effects in the model, and as indicated by the R-squared value, accounts for a larger percent of variance explained in the model.

Table 10

*Mothers' and Students' Report of Family Functioning: Indirect Effects, Direct Effects, Total Effects, and R-squared Table for Predictors of Aggression*

Effects	Teachers' reports	Students' reports	Mothers' reports
Indirect Effects			
Via Cohesion (Mother)	-0.02	-0.01	0.02
Via Structure (Mother)	-0.05*	-0.01	0.03
Via Reactivity in Family Communication (Mother)	0.02	0.02	0.07**
Via Cohesion (Student)	0.01	0.01	0.00
Via Structure (Student)	0.01	0.00	0.00
Via Reactivity in Family Communication (Student)	0.01	0.01	0.00
Total Indirect Effect of Family Functioning	-0.04	0.03	0.13**
Direct Effect of Maternal Depression	0.09*	0.05	0.13**
Total Effect of Maternal Depression	0.13**	0.08*	0.26**
% Indirect Effect	31%	38%	50%
R-squared value	0.08**	0.10*	0.16**

\* $p < .05$ , \*\* $p < .001$

## Discussion

The purpose of this study was to examine the relation between maternal depression and adolescents' aggression, and to investigate three mechanisms that past research (e.g. Gelfand & Teti, 1990; Richters, 1992; Timko et al., 2002) suggests account for this relation (parenting practices, family functioning, and informant discrepancy). The present study first hypothesized that a positive association would be found between maternal depression and adolescents' aggression. Consistent with this hypothesis, a significant relation was found between maternal depression and adolescents' aggression, such that higher levels of maternal depression were associated with higher levels of adolescents' aggression. This finding was consistent across teachers', students', and mothers' reports of aggression and is consistent with previous research findings that have found that maternal depression places adolescents at a higher risk for aggressive outcomes (e.g. Cummings & Davies, 1994). This finding contributes to the current literature by finding a positive relation between maternal depression and adolescents' aggression among a population that has been understudied in previous research (a

predominantly minority sample of adolescents and their families from a range of socioeconomic backgrounds).

The second model predicted that the relation between maternal depression and adolescents' aggression would be a measurement artifact, such that depressed mothers would over-report levels of adolescents' aggression and the discrepancy between mothers' and students' reports and between mothers' and teachers' reports of aggression would be largest among mothers with higher levels of depression.

As hypothesized, the present study found an informant discrepancy between mothers' and students' reports and between mothers' and teachers' reports of adolescents' aggression, and maternal depression was found to moderate the degree of the discrepancy between reports. However, the specific pattern of this relation was inconsistent with what was expected. The findings indicated that higher levels of maternal depression were associated with smaller discrepancies between reports of aggression and lower levels of maternal depression were associated with larger discrepancies. Consistent with previous research (e.g. Richters & Pellegrini, 1989), the present study found that mothers with higher levels of depression are more accurate reporters of adolescents' aggression. According to the accuracy theory, a depressed mother has a heightened awareness of her child's negative behaviors and is able to perceive her child's behaviors more accurately than a nondepressed mother because she does not hold a positive bias (Ackermann and De Rubeis, 1991; Richters & Pelligrini, 1989). These findings add to the current literature (e.g. Conrad & Hammen, 1989;

Richters & Pelligrini, 1989) by providing support for the accuracy theory among a predominantly minority sample of adolescents and their families.

Consistent with previous research, the present study found a main effect for gender, such that male adolescents were rated as more aggressive than female adolescents (e.g. Crick & Rose, 2000; Lau et al., 2004; Sadovnik, 1994). In addition, the present study examined how gender affected the role of informant discrepancy in the relation between maternal depression and adolescents' aggression, and found that the degree of the difference across sources did not vary as a function of gender.

As hypothesized, the present study also found that parenting practices mediated the relation between maternal depression and adolescents' aggression. This finding is consistent with previous research (e.g. Dumas & Wekerle, 1995). More specifically, parenting practices mediated the relation between maternal depression and adolescents' aggression across all reporters, but the strongest effect was found from maternal depression to mothers' reports of adolescents' aggression. The indirect effect was mostly accounted for by discipline effectiveness, and this finding is consistent with previous research (e.g. Robila & Krishnakumar). However, discipline avoidance was not found to mediate the relation between maternal depression and adolescents' aggression. One plausible explanation for the lack of this finding is that previous research (e.g. Robila & Krishnakumar, 2006) has often examined the use of physical punishment as a mediator in this relation, but specific aspects of punishment have not been examined. The present study adds to the literature by clarifying how different aspects of discipline practices (e.g. effectiveness and avoidance) are linked to the relation between maternal depression and

adolescents' aggression. Also inconsistent with previous research, neither mothers' or students' reports of monitoring and involvement were found to mediate the relation between maternal depression and adolescents' aggression (e.g. Amato & Fowler, 2002). This suggests that monitoring and involvement may not mediate the relation between maternal depression and adolescents' aggression among the current sample, which included a predominantly minority sample of adolescents and their families from a range of socioeconomic backgrounds.

As expected, the present study also found that family functioning mediated the relation between maternal depression and adolescents' aggression, and this is consistent with previous research (e.g. Davies & Windle, 1997). However, the present study only found support for family functioning mediating the relation between maternal depression and mothers' reports of adolescents' aggression. The indirect effect was mostly accounted for by reactivity in family communication, and this finding is consistent with previous research (e.g. Miller et al., 1993; Sheeber & Sorensen, 1998). In contrast to previous research, structure and cohesion were not found to mediate the relation between maternal depression and adolescents' aggression (e.g. Fendrich et al., 1990; Goodman & Gotlib, 1999). A potential reason for the lack of findings for cohesion and structure is that previous research has frequently examined the effects of cohesion and structure among a predominantly Caucasian middle to upper class sample of families. The sample in the current study consisted of predominantly minority families from a diverse range of socioeconomic backgrounds. Therefore, the findings may indicate that cohesion and



structure do not mediate the relation between maternal depression and adolescents' aggression for the sample in the present study.

Overall, family functioning and parenting practices mediated the relation between maternal depression and adolescents' aggression, and parenting practices mediated the relation over and above family functioning. More specifically, parenting practices accounted for the highest percentage of indirect effects in the relation between maternal depression and mothers' reports of adolescents' aggression and mediated the relation between maternal depression and all three reports of adolescents' aggression. This finding contributes to previous research (e.g. Davies & Windle, 1997; Miller et al., 1993) by indicating that parenting practices has the greatest impact on the relation between maternal depression and adolescents' aggression among an understudied population of a predominantly minority sample of adolescents and their families.

The relation between parenting practices and adolescents' aggression, and between family functioning and adolescents' aggression, varied as a function of the source of the reports. This pattern may reflect mothers and adolescents having different perceptions of parenting practices and family functioning. For example, a mother may feel that she always listens to her adolescent when he or she wants to talk, whereas her adolescent may feel like his or her mother is not available when the adolescent wants to talk. A lack of communication between a mother and an adolescent, in conjunction with different perceptions of the mother-child interaction, could lead to mothers and adolescents having different perceptions of monitoring and involvement. Alternatively, a mother's investment in the structure or cohesion of her family may cause her to have a

different perception of family functioning, such that adolescents' perceptions of family functioning differ from their mothers' perception. Another plausible explanation is that mothers may have greater insight into parenting practices or family functioning because they are carrying out these behaviors.

Another possible explanation for the results varying as a function of the source is differences in reports of aggression. As the within-subjects ANOVA suggested, mothers' reports of adolescents' aggression significantly differed from students' and teachers' reports. Therefore, mixed findings across different informants could be explained by differences across reports of adolescents' aggression. The discrepancy of findings across sources could also be the result of source variance, such that differences between adolescents' and mothers' reports are attributed to the measurement method. For example, a mother's perceptions could influence her ratings of all variables in the model (maternal depression, family functioning, parenting practices, and adolescents' aggression), and these perceptions could generate a consistent pattern for a mother's ratings across variables in the model. These perceptions could be influenced by a number of factors, such as mothers being in a better position than their adolescents to rate parenting practices, family functioning and adolescents' aggression. These findings add to the literature (e.g. Kraemer et al., 2003) by pointing out the impact of common variance associated with a single reporter and highlighting the significant and/or stronger indirect effects that are found when using the same reporter of parenting practices or family functioning and adolescents' aggression.

## Limitations of the Present Study

Several limitations of the present study should be acknowledged. The first limitation is that the design of the study was cross-sectional. A cross-sectional design is not able to answer all the questions about the relation between maternal depression and adolescents' aggression, such as determining cause-effect relations and the effects of chronic versus single episode depression on adolescents. However, variables such as maternal depression are not static. Research suggests that current maternal depression, as compared to past history of or remitted maternal depression, is a better predictor of aggression among adolescents (e.g. Hammen et al., 1987). Another limitation of examining cross-sectional data is that it is unclear how developmental continuities and changes occur in conjunction with maternal depressive symptoms. Despite this limitation, past research has already demonstrated a timeline of the relation between maternal depression, adolescents' aggression, and the three mechanisms of the present study and has demonstrated causality among the variables. Therefore, the findings of this study, in conjunction with past findings and theories, allowed the researcher to draw stronger conclusions about the causal relations between maternal depression, adolescents' aggression, and the three mechanisms. The findings also add to previous research findings because it examines the role of all three mechanisms within the same sample and examines these factors among an understudied population.

The assessment method used during data collection for the sample is another limitation of the present study. Parents' measures were administered orally (read aloud to them by a researcher), whereas the student measures were collected on a computer. The

data in the study may be confounded by self-report bias, in which parents were reluctant to report unfavorable behaviors (e.g. psychopathology or poor monitoring and involvement), particularly when reporting to a researcher aloud and in person.

Another limitation is that the sample for the current study consists of only sixth grade adolescents from a predominantly minority sample of adolescents and their families. The findings may only generalize to low and middle class minority families and the researcher is limited in generalizing findings across other adolescent age groups or grade levels. Despite this limitation, past research has highlighted the importance of examining this understudied population. The present study also used a sample of adolescents who were identified as being at-risk for aggression. The selected sample included students in each school who disproportionately contributed to rates of aggression and had a high degree of social influence among their peers. By using the selected sample, this may enhance the chance that a relation would exist between maternal depression and adolescents' aggression because the study is using a sample of adolescents who were identified as exhibiting high levels of aggression. For example, if adolescents included in the selected sample all exhibited higher levels of aggression, as compared to their peers, then this may increase the likelihood or the degree of the relation between maternal depression and adolescents' aggression. However, this relation has already been replicated several times in the literature (e.g. Gelfand & Teti, 1990) and the current study is intended to focus on examining the mechanisms that mediate this relation, and not whether or not this relation exists.

A final limitation of the present study is that the data set included four sites (Durham, Richmond, Northeastern Georgia, and Chicago) that varied across an array of characteristics, including racial composition and setting of the school (e.g. rural versus urban). Because of the diverse nature of the sample, any effects would need to be fairly robust across sites and subgroups within sites to be detected. Therefore, the results of the present study do not preclude the possibility that results may have differed by subgroups that varied by race, gender, setting, or site. When considering the implications of these findings for future youth violence prevention programs, the possibility of subgroup differences should be taken into account. On the other hand, having data from four different sites can also be considered a strength for the present study. By having participants from multiple areas across the United States, this could improve the generalizability of the findings.

#### Directions for Future Research

Previous research has suggested that family functioning, parenting practices, and informant discrepancy account for the relation between maternal depression and adolescents' aggression. The results of the present study support previous research studies (e.g. Robila & Krishnakumar, 2006), but also highlight how method variance can impact findings. The results add to the literature by finding that these mechanisms mediate the relation between maternal depression and reports of adolescents' aggression among a high-risk predominantly minority sample of adolescents and their families.

The findings of the present study may have implications for including family and parenting programs in youth violence prevention and intervention programs aimed at

high-risk minority adolescents. Previous research has identified programs that are focused on improving parenting and family functioning, and programs that include parenting training in conjunction with family functioning programs have been found to be most effective and have been found to be associated with decreases in child behavior problems and improvements in general family functioning (Adams, 2001; Sayger, Horne, & Glaser, 1993). Based on the findings of the present study, future prevention and intervention programs may want to focus specifically on the most influential mechanisms (e.g. discipline effectiveness) that lead to aggressive outcomes in adolescents.

The present study also suggested that mothers with higher levels of depression may be more accurate in their ratings of adolescents' aggressive behaviors, at least in terms of agreement with teachers' ratings. This finding has implications for considering the role of levels of maternal depression on informant discrepancy when using maternal report as the primary source of information about an adolescent's behavior. Future research examining the role of maternal depression in informant discrepancies should include different methods, such as direct observation, for measuring the impact of maternal depression on informant discrepancy between mothers', teachers', and students' reports of adolescents' aggression. The use of multiple informants and multiple methods could be a valuable contribution to the current literature, but a number of factors might make it difficult to develop a gold standard for determining the accuracy of reports of adolescents' aggression. One factor is that teachers and parents often observe behaviors in circumscribed settings (e.g. home versus school), and a researcher would need to follow an adolescent around all day or be able to sample representative and objective

behavior in a controlled setting to accurately determine an adolescent's levels of aggression. However, this may not be realistic or plausible and may pose additional limitations (e.g. reactivity effects). Regardless, developing a gold standard criterion would be a valuable contribution to research on informant discrepancies. Future research may also want to explore discrepancies between mothers' and adolescents' reports of parenting or family functioning and examine the possible role of maternal depression in these discrepancies.

Finally, limitations in the present study may be addressed in future research. For example, longitudinal analyses could be utilized to examine the cause-effect relations between maternal depression, adolescents' aggression, and the three variables that have been suggested to impact this relation (parenting practices, family functioning, and informant discrepancy). A longitudinal study would also provide information about the relation between maternal depression, adolescents' aggression, and the three mechanisms across time and different age groups. Future research may also want to explore the impact of current depressive symptoms, as compared to past history of maternal depression. In addition, future research may want to examine the role of paternal depression in aggressive outcomes among adolescents.

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### **Current Research Position:**

**Research Assistant at Virginia Commonwealth University** Fall 2007-Present  
Research Assistantship at the Clark Hill Institute of Positive Youth Development at Virginia Commonwealth University, working with Professor Albert Farrell, Ph.D. Dr. Farrell is the director of the Clark Hill Institute of Positive Youth Development and his research includes developing effective violence prevention programs for high-risk urban adolescents. In particular, recent research has focused on identifying risk and protective factors related to problematic behavior among adolescents in high risk environments, with a particular focus on the factors that promote positive development. Current projects include implementing a debriefing interview to identify variables that may impact the efficacy of violence prevention and intervention efforts. In addition, current research also includes the development of a think-aloud approach to cognitive assessment to identify the underlying processes (i.e. values and belief systems) that may influence how minority

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