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MATERNAL MONITORING AND MATERNAL PSYCHOLOGICAL WELL-BEING:  
IMPORTANT COMPONENTS IN TREATING CONDUCT DISORDER

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

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## **Abstract**

### **MATERNAL MONITORING AND MATERNAL PSYCHOLOGICAL WELL-BEING: IMPORTANT COMPONENTS IN TREATING CONDUCT DISORDER**

By Benjamin V. Rosen, B.A.

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

Virginia Commonwealth University, 2013

Major Director: Micah L. McCreary, Ph.D.  
Associate Professor of Psychology  
Department of Psychology

Conduct disorder is characterized by behaviors that take a large toll on the individuals, families, and communities afflicted. Thus, improving treatment effectiveness should be a high priority. Currently, common intervention programs do not address parental depression, even though it has been linked to adolescent conduct disorder behaviors in some studies. The current study assessed whether the relation between maternal depression and adolescent conduct disorder behaviors is mediated by another factor which has been linked to conduct disorder behaviors, maternal monitoring. Results did not support the hypothesized mediated association, but did show significant individual associations for both maternal depression and maternal monitoring with adolescent conduct disorder behaviors. Secondary analyses showed that adolescent age and household income were significantly related to maternal monitoring and maternal depression, respectively. Findings also suggested that child disclosure may drive the association between maternal monitoring and adolescent conduct disorder behaviors. Implications for intervention are discussed.



# Maternal Monitoring and Maternal Psychological Well-Being: Important Components in Treating Conduct Disorder

## Statement of Purpose

Conduct disorder, which is diagnosed in childhood and adolescence, is thought to have a lifetime prevalence of 6.8% (Merikangas et al., 2009). It is defined by the *Diagnostic and Statistical Manual of Mental Disorders, 5<sup>th</sup> Edition* (American Psychiatric Association [APA], 2013) as “a repetitive and persistent pattern of behavior in which the basic rights of others or major age-appropriate societal norms or rules are violated” (p. 469). In order to receive a diagnosis of conduct disorder, at least three of the 15 criteria listed in the DSM-5 must be present. These criteria are grouped into four categories: aggression towards people and animals; destruction of property; deceitfulness or theft; and serious violation of rules (APA, 2013). By definition, then, conduct disorder affects not only the diagnosed individual and those with whom they interact, but is also associated with high costs to society in general.

The costs of conduct disorder are extremely high and affect individuals, families, communities, and society. For instance, an analysis by Cohen and Piquero (2008) estimated that society could save between \$2.6 million to \$5.3 million just by saving one 14-year old high-risk juvenile from a life of crime. Other authors have examined the monetary effects of conduct disorder on society by looking at the total cost of crime, which has been estimated at \$1 trillion annually (Anderson, 1999; Dodge & McCourt, 2010). The rationale for linking the overall cost of crime with conduct disorder is that the vast majority of crime committed in the United States is perpetrated by repeat-offense criminals who represent a disproportionately small percentage of the population. In addition, of these repeat-offense criminals, a disproportionately large percentage began their anti-social behaviors at a young age (Foster, Jones, & Conduct Problems

Prevention Research Group, 2006). Further, those who demonstrate anti-social behaviors at a young age are likely to meet the DSM-IV-TR criteria for conduct disorder.

While placing a dollar amount to the costs associated with the disorder may be effective in adding shock value, and thus brings more attention to the importance of addressing the disorder, it is also important to remember that there are additional costs associated with conduct disorder which cannot be translated into simple monetary terms. For example, it has been pointed out that any monetary estimates of the costs of conduct disorder “cannot begin to include the emotional pain to victims, perpetrators, and bystanders” (Dodge & McCourt, 2010, p. 277). These bystanders and victims include those directly affected, such as family members and close friends, and also those affected indirectly including community members, schools, police departments, etc. It thus behooves researchers to continue to research the many facets of conduct disorder and evaluate the efficacy of its treatment in hopes of decreasing the negative emotional, familial, and societal impact of the disorder. In order to provide a more nuanced depiction of how conduct disorder increases family and interpersonal strife, leads to violence and destruction, and limits the opportunities for personal and relational growth, this thesis includes two illustrative examples below. Both appeared in the article “Conduct Disorder: Diagnosis and Treatment in Primary Care” authored by Searight, Rottnek, & Abby (2001).

ILLUSTRATIVE CASE 1 Tim is a six-year-old boy brought to the family medicine clinic for an initial visit. On entering the examination room, the physician observed Tim spinning in circles on the stool while his mother pled, “If I have to tell you one more time to sit down...” Tim was not permitted to begin first grade until his immunizations were updated. His mother explained that Tim had visited several physicians for immunization but was so disruptive that the physicians and nurses always gave up. She hoped that with a new physician, Tim might comply. The mother described a several-year history of aggressive and destructive behavior, as well as four school

suspensions during kindergarten. He often becomes “uncontrollable” at home and has broken dishes and furniture. Last year, Tim was playing with the gas stove and started a small fire. Tim frequently pulls the family dog around by its tail. Tim's older sisters watched him in the past but have refused to do so since he threw a can of soup at one of them. Tim's father is a long-haul truck driver who sees Tim every three to four weeks

ILLUSTRATIVE CASE 2 Sharon, a 15-year-old girl, was brought to the office by her mother. Her mother explained that Sharon was suspended from school for assaulting a teacher and needed a “doctor's evaluation” before she could return to class. The history reveals that this is Sharon's 10th school suspension during the past three years. She has previously been suspended for fighting, carrying a knife to school, smoking marijuana and stealing money from other students' lockers. When asked about her behavior at home, Sharon reports that her mother frequently “gets on my nerves” and, at those times, Sharon leaves the house for several days. The family history indicates that Sharon's father was incarcerated for auto theft and assault. Sharon's mother frequently leaves Sharon and her eight-year-old brother unsupervised overnight. (pp. 1579-1580)

As shown by these two illustrations, the painful correlates of conduct disorder are felt by the individual afflicted, their friends, their family, and their community. Further exacerbating the situation is the relatively poor prognosis associated with being diagnosed with conduct disorder (e.g., APA, 1994; Kazdin, 1995, Moffitt, 2003). Many of the children and adolescents diagnosed with conduct disorder later meet criteria for antisocial personality disorder as adults, with some estimates as high as 50% (Moffitt, 2003). In addition the literature suggests that, while many children and adolescents diagnosed with conduct disorder do not go on to be diagnosed with antisocial personality disorder as adults, even these individuals often experience other forms of maladjustment later in life. Examples of such maladjustment include substance abuse, poor marital relationships, and poor occupational adjustment, as well as other psychiatric disorders

such as mood disorders (Kazdin, 1995; Moffitt, 2003). The poorest adult outcomes are associated specifically with a particular distinction within conduct disorder, namely the early-onset or life-course persistent pattern rather than the adolescent-onset, life-course-limited pattern (e.g., APA, 1994; Kazdin, 1995; Moffitt, 2003; Rutter, 2006). The distinction between the early-onset, life-course-persistent and the adolescent-onset, life-course-limited patterns will be discussed in detail during the examination of the theoretical treatise of the disorder below.

Given the high emotional, interpersonal, and financial toll associated with the antisocial behaviors of conduct disorder, and the relatively poor prognosis for those afflicted with the disorder detailed above, it is difficult to overstate the importance of continually evaluating and improving current treatment interventions.

### **Outline for Subsequent Chapters**

The next chapter will provide a discussion of the relevant literature concerning conduct disorder. This review will address two main areas of concern:

- a) A review of the known etiology of conduct disorder. This will include a discussion of the relevant theoretical treatises of the diagnosis, as well as a summary of the relevant empirical findings. This section will also make explicit the importance of understanding the etiology of the disorder prior to evaluating its most common treatment interventions.
- b) A brief discussion of the most common interventions used currently to treat conduct disorder. Included will be an evaluation of how well each intervention addresses the known etiological factors of conduct disorder.

Following this review of the literature, the problem statement and hypotheses put forth by this thesis will be explicated. A detailed account of the methodology used to address the stated

problem and test the stated hypotheses will then be presented. The subsequent chapter will present the results of the study. The paper will conclude with a discussion of these results, with a focus on the possible implications and limitations of the study.

## **Review of the Literature**

### **Etiology of Conduct Disorder: What is Known and Why it is Important in Treatment**

**Importance of understanding etiology in treatment evaluation.** The lens this researcher has chosen for evaluating current conduct disorder interventions, and for interpreting their empirical outcomes, involves looking at how well each intervention addresses the known etiological factors of the disorder. The literature has already established such an emphasis on matching treatment to etiology (e.g., Connell, Dishion, Yasui, & Kavanagh, 2007; Frick, 1998).

For instance, Connell and colleagues (2007) have stated that:

A major tenet of prevention in science is that a program that tightly links developmental and intervention research is likely to provide effective strategies for reducing child and adolescent maladjustment and preventing the occurrence of more serious forms of problem behavior, such as delinquency, antisocial behavior, substance use, and deviant peer association. (p.568)

In using this lens, it is imperative to first discuss the known etiology of conduct disorder before evaluating current treatment interventions. A discussion of the etiology of conduct disorder via theoretical treatises and empirical research follows.

#### **Theoretical treatise on the etiology of conduct disorder.**

***Genetics-environment interaction.*** A major theme across the conduct disorder literature is the recognition that neither genetic factors nor environmental factors alone account for the

development and maintenance of conduct disorder (e.g., Bernat, August, Hektner, & Bloomquist, 2007; Connell et al., 2007; Dick et al., 2009; Dodge & McCourt, 2010; Eddy, J.M., Whaley, R.B., & Chamberlain, P., 2004; Frick, 1998; Jaffee et al., 2005; Rhee & Waldman, 2002; Rutter, 2006; Semke et al., 2010).

In an article published in 2010, Dodge and McCourt attempted to synthesize what is known about the genetic and environmental interactions that are involved in the etiology of conduct disorder by proposing a theoretical model which included three types of genetic-environment interactions. Their first proposed interaction posits that even though a child may have a genetic predisposition to developing conduct disorder, certain environmental factors can be protective and inhibit those genetic factors from being expressed. For example, Dodge and McCourt built upon the earlier work of Bates, Pettit, Dodge, and Ridge (1998), as well as Dick, et al. (2009). These studies found that a child's genetic predisposition to developing antisocial behaviors (as evidenced by the genetic proxy of infant temperament or by genetic variations of the GABRA2 receptor) was mitigated or buffered by having parents who maintained structured environments with appropriate levels of supervision and monitoring.

The second interaction type proposed by Dodge and McCourt involved a mirror image of the first type, as this time environmental risk factors for developing conduct disorder were mitigated by genetic protective factors. Empirical support included a study (Dodge et al., 2003) which concluded that among children who experienced at least three consecutive years of peer rejection (a widely accepted environmental risk factor for developing conduct disorder), those with the genetic proxy of calm temperament during infancy had a decreased likelihood of developing antisocial behaviors compared to peers with a difficult temperament in infancy.

Dodge and McCourt's (2010) third and final type of genetics-environment interaction in conduct disorder development can be considered an integration of the first two types. This proposed interaction describes the "dynamic cascades" of how genetics and environment interact in a cyclical fashion, perpetuating the risks for conduct disorder. For instance, the researchers describe that problem behaviors can lead to harsher parenting, which then leads to heightened conflict between the parent and child, which may then lead to lower levels of parental knowledge about their child's activities and associations, which can contribute to increased risk for associations with deviant peers, and so forth. Empirical support for this interaction type comes from a study by Dodge and colleagues in 2008 which identified several child and environmental factors that "cascaded" and were associated with increased probability of violent behaviors.

While the models proposed by Dodge and McCourt (2010) provide an excellent way of conceptualizing how genetics and environmental risk factors interact in the etiology of conduct disorder, they do not provide a specific causal theory of the origins of conduct disorder. An analysis of the specific causal mechanisms of conduct disorder and antisocial behaviors can be found in the literature of both social learning theory and the early- versus late-onset taxonomy. A review of these two theories follows.

***Social learning theory.*** Social learning theory has been described as "the dominant theory explaining antisocial behaviour in the past 30 or 40 years" (Scott & Dadds, 2009, p.1441), and it has been stated that "improving the parent-child relationship by using strategies based on social learning theory has become the cornerstone for the treatment of conduct problems in children" (Scott & Dadds, 2009, p.1441). In essence, this theory is compatible with Dodge and McCourt's (2010) theoretical models in that both acknowledge that genetic/innate factors

interact with environmental factors in determining the expression of antisocial behaviors.

However, social learning theory, as would be expected from its name, focuses largely on the environmental factors which the theory identifies as causal agents or core causes. For instance, while social learning theorists Snyder, Reid, and Patterson (2003) make mention of three “organismic self-regulation variables” (executive attentional control, motivational inhibition, and negative emotional reactivity), they clearly conceptualize these innate or genetic factors only as variables which affect the more salient relation between social core causes and antisocial behavior.

The basic premise of social learning theory is that a child’s antisocial behavior emerges through reinforcement and modeling of antisocial behaviors, in particular settings and during particular developmental periods, from family members, peers, teachers, and other significant individuals in the child’s life (e.g., Huang, Kosterman, Catalano, Hawkins, & Abbott, 2001; Prather & Golden, 2009; Scott & Dadds, 2009; Smith & Stern, 1997; Snyder, Reid, & Patterson, 2003). Within this theory, broader environmental factors (similar to genetic factors) do play a role in the development of the disorder, but they do so only by affecting the immediate social interactions of the child, and thus are indirect or distal variables. The proximal, core causes are the social contingencies the child experiences first at home, and as the child progresses in age, later amongst peers, teachers, and other significant adults (Scott & Dadds, 2009; Snyder, et al., 2003).

Simply put, social learning theory holds that a child is more likely to repeat behaviors which are reinforced or functional, and to decrease behaviors which are punished or do not serve their intended function. This refers to the social contingencies encountered by the child for specific behaviors. For instance, if a parent does not typically pay enough attention to their child



except when the child is acting out behaviorally, acting out behaviors are reinforced and serve the function of gaining attention. Similarly, if a parent acquiesces to their child's demands because the child became verbally aggressive, the child's behavior has been reinforced by serving its intended function. Both of these are basic examples of how social learning theory conceptualizes the roots of antisocial behavior and conduct disorder. Other familial examples include parent's modeling aggressive or antisocial behavior as a way to get what one wants, or a parent ignoring or even punishing prosocial behaviors from the child (Scott & Dadds, 2009; Snyder, et al., 2003). In general, these types of interactions with parents and siblings have been described as "highly aversive, inconsistent, and unsupportive" (Snyder, et al., 2003, p. 31). These authors go further to explain that "Coercive behavior is shaped by short-term social contingencies or its functional value in turning off aversive events and control by others (negative reinforcement) and in attaining attention and access to desired activities and materials (positive reinforcement)" (Snyder, et al., 2003, p.31).

It is important to note that, according to social learning theory, whether an antisocial behavior provides functional value is dependent not only on the child and those individuals with whom the child interacts, but also on the particular setting where the behavior occurs and the age at which the behaviors are exhibited (Snyder, et al., 2003). It makes sense that certain behaviors may serve a reinforcing purpose, such as turning off aversive events, in one setting but not necessarily all settings. Similarly, there are developmental considerations which affect the social contingencies a child experiences, and thus which behaviors the child expresses and how these behaviors are responded to. These considerations will be discussed in more detail later in this section.

Social learning theory additionally posits that if a child is receiving modeling and reinforcement for antisocial behaviors, the likelihood decreases that this child is also learning and being reinforced for prosocial behaviors. Children who are learning antisocial behaviors exhibit these behaviors more frequently. This, in turn, elicits more frequent coercive and harsh reactions from parents and significant others and this type of pattern begins to characterize the typical interactions between the child and his or her parents. Thus, not only are antisocial behaviors further modeled and reinforced, but also the number of opportunities to receive training in essential pro-social skills is diminished because such skills are modeled less frequently by the parents and exhibited less frequently (and thus less available for reinforcement) by the child (Scott & Dadds, 2009; Snyder, et al., 2003).

The combination of learning antisocial behaviors, while simultaneously losing important opportunities to learn important skills (i.e. pro-social, problem solving, and self-regulation skills), places children in a precarious position as they get older and begin to engage in social relationships outside of the home. As has been noted, social learning theory proposes that relationships and interactions with parents (and to a lesser extent, siblings) play a central role in the etiology of conduct disorder and antisocial behaviors, especially in early childhood. However, according to the theory, affiliations and interactions outside of the home are also of significance, especially as children age. In fact, according to social learning theory, the social contingencies involved in the development of antisocial behavior make up just one of the two causal processes of antisocial development. The second, and related, casual process involves the peer affiliations and “environmental niches” children pursue as they get older and peer relationships become more important and influential (Huang et al., 2001; Prather & Golden, 2009; Snyder, et al., 2003).

These environmental niches become important as a child ages because the niche will play a large role in determining which social contingencies from early childhood the child will continue to experience; which contingencies will dissipate with regards to frequency and saliency within the child's experiences; and which, if any, new contingencies will be encountered. Often, a child will gravitate towards a particular niche and particular peer affiliations which appear compatible in terms of behaviors, backgrounds, etc. (Snyder, et al., 2003). Unfortunately, this often results in children whose antisocial behaviors have been already modeled and reinforced, and who have a deficit of pro-social skills, to form affiliations with other children with these same experiences, skills, and behaviors. Together, these children will seek settings with decreased adult supervision (Snyder, et al., 2003). Through this process, following social learning theory, children predisposed to antisocial behaviors via early familial relationships and interactions will later further solidify their antisocial tendencies by way of peer deviancy training. Peer deviancy training includes social reinforcement of antisocial behaviors, deviant talk, increased opportunities for antisocial behavior, perceptions of high peer involvement in antisocial behaviors and low expectations for getting caught, as well as co-participation in antisocial behaviors (Huang, et al., 2001; Snyder, et al., 2003).

Clearly, then, as children get older and begin to exert more direct control over their social affiliations and interactions, the effects of the social contingencies established by their parents become less proximal in the development and maintenance of the child's antisocial behaviors. Social learning theory, however, does not imply that parents' behaviors are of little consequence even as their children get older, just that the mechanisms by which they affect their child's antisocial behaviors change. More specifically, though earlier in childhood the primary causal mechanisms involve the modeling and contingencies a child is exposed to directly from his or

her parents, when this child begins to develop his or her environmental niche, his or her parents still play a more distal role in managing the contingencies their child is exposed to via parental monitoring (Snyder, et al., 2003). According to social learning theory, monitoring is the mechanism by which parents exert influence over the peer associations and settings which their child may choose for his or her environmental niche, and thus monitoring allows parents to limit their child's exposure to peer deviancy training. Ideally, parental monitoring involves "titrating elective experiences to the growing capacity of the child to problem solve and self-regulate" (Snyder, et al., p. 34)

Social learning theory posits that parental monitoring evolves from early parent-child interactions. Monitoring includes an array of techniques and types of interactions, including placing limits and setting rules for acceptable social behaviors, affiliations, and whereabouts; tracking the child's whereabouts and peer associations via promoting child self-disclosure and seeking information about a child's behaviors and affiliations from outside sources; contingency contracting; and outlining the consequences for failure to adhere to the designated or agreed upon limits and rules (Kerr & Stattin, 2000; Snyder, et al., 2003). These forms of monitoring first take root in early parental efforts to engage in discipline, communication, and problem-solving processes within the family dynamic. They are translated to later parental monitoring by extending these processes to those activities and interactions in which parents are not directly involved in (Snyder, et al., 2003).

Up to this point, this review focused on purely theoretical descriptions of the basic underpinnings of social learning theory as it relates to the etiology of antisocial behaviors and conduct disorder. However, there is also a great deal of empirical evidence to support the notion that social contingencies and monitoring play causal roles in the etiology of antisocial behaviors

(e.g., Dishion, Kavanagh, Schneiger, Nelson, & Kaufman, 2002; Eddy & Chamberlain, 2000; Forgatch & DeGarmo, 1999; Huang, et al., 2001; Kellam, 1998; Webster-Stratton & Hammond, 1997; Scott & Dadds, 2009; Snyder, et al., 2003; Stoolmiller, et al., 2000)

Several studies have examined the casual role of parental social contingencies and modeling in the etiology of antisocial behaviors. Forgatch & DeGarmo (1999), as one example, evaluated an intervention which targeted the specific parental behaviors of reinforcing child pro-social behaviors: tracking; setting appropriate limits; and establishing appropriate social contingencies with regards to deterring antisocial behaviors. Compared to the control group, the intervention group saw reductions in “coercive parenting” (Forgatch & DeGarmo, 1999, p. 711), referring to the parenting behaviors which lead to social contingencies which promote child antisocial behaviors. Moreover, these improved parenting behaviors were correlated with better ratings of the child’s adjustment, as rated by the child, the child’s mother, and the child’s teacher. In similar fashion, Webster-Stratton & Hammond (1997) demonstrated that an intervention which targeted parental social contingencies by providing training on parenting and interpersonal skills significantly improved both child and parent behaviors.

Huang and colleagues (2001) provided further support for the principle of social learning theory in their study which focused on effects of socialization primarily via peers, rather than parents. Their study tested the social development model (which incorporates principles from social learning theory) with regards to the etiology of violence among adolescents. Not surprisingly, these researchers found considerable support for the notion that socialization has a causal effect on adolescent violent behavior, even when controlling for an individual’s past violent behavior (Huang, et al., 2001). Reinforcement and rewards, antisocial opportunities, and involvement with antisocial peers were all included in the researchers’ operationalization of

socialization. These findings are convergent with the results of earlier studies which found a significant relationship between peer socialization in school settings and child aggression (Kellam, et al., 1998; Stoolmiller, Eddy, & Reid, 2000).

The above studies are examples of the sound empirical support in the literature for the causal role of social contingencies in the development and maintenance of antisocial behaviors. There is also empirical support for the relationship between parental monitoring and antisocial behaviors, although this relationship is not likely to be described as causal (Snyder, et al., 2003). For instance, it was demonstrated in a longitudinal study that an intervention which improved parental monitoring curbed the normative growth in substance use which occurs as children move into adolescence (Dishion, et al., 2002). In another example, Eddy and Chamberlain (2000) found via their experimental intervention that effective parental monitoring was associated with decreased child antisocial behaviors and delinquency.

***Early-Onset, Life-course-Persistent vs. Late-Onset, Adolescence-Limited Taxonomy.***

Although social learning theory has garnered wide support in the theoretical and applied works related to conduct disorder and antisocial behaviors, it is certainly not the only theoretical casual model of the disorder. Another approach to conduct disorder which has acquired wide acceptance in the field is Moffitt's (2003) early onset, life-course-persistent versus late-onset, adolescence-limited taxonomy of antisocial behavior. In fact, there is enough empirical support for this model that it has been incorporated into the DSM-IV (Moffitt, 2003). While this theoretical model accounts for antisocial behaviors in a different manner than social learning theory, there is also a considerable amount of overlap between the two theories.

At the crux of this model is the theoretical claim that children who exhibit antisocial behaviors early in childhood have fundamentally different causal roots and prognoses than do individuals who only begin to display antisocial behaviors in adolescence. Specifically, the

etiology of early onset antisocial behaviors is thought to include innate, heavily genetic risk factors which interact with risk factors in the child's environment, whereas antisocial behaviors which do not appear until adolescence are thought to have social mechanisms and drives for autonomy at the causal root. Also, as would be expected by the name of the taxonomy, it is posited that early-onset antisocial behaviors have a much higher probability of continuing into adulthood, whereas adolescent-onset antisocial behaviors, due to their casual roots unique to adolescence, are much more likely to decrease and desist after adolescence (Moffitt, 2003). Important additional distinctions include the claim that individual differences play a much larger role in early-onset rather than adolescent-onset antisocial behaviors, and that early-onset is related to more serious behaviors (e.g., weapons offenses, robbery, assault, etc.) than adolescent-onset (e.g., petty theft, public intoxication) (Moffitt, 2003).

To provide a more detailed account of the causal mechanisms involved with each subtype of antisocial behavior in this taxonomy, I have included a summary from Dr. Moffitt below. This summary appeared in a review she wrote ten years after originally proposing her taxonomy (Moffitt, 2003).

According to the theory, life-course-persistent antisocials are few, persistent, and pathological. Adolescence-limited antisocials are common, relatively transient, and near normative....In a nutshell, we suggested that life-course-persistent antisocial behavior originates early in life, when the difficult behavior of a high-risk young child is exacerbated by a high-risk social environment. According to the theory, the child's risk emerges from inherited or acquired neuropsychological variation, initially manifested as subtle cognitive deficits, difficult temperament, or hyperactivity. The environment's risk comprises factors such as inadequate parenting, disrupted family bonds, and poverty....Over the first two decades of development, transactions between the individual and the environment gradually construct a disordered personality with hallmark features of

physical aggression and antisocial behavior persisting to midlife....In contrast, we suggested that adolescence-limited antisocial behavior emerges alongside puberty, when otherwise ordinary healthy youngsters experience psychological discomfort during the relatively role-less years between their biological maturation and their access to mature privileges and responsibilities, a period we called the 'maturity gap' ....While young people are in this 'gap', it is virtually normative for them to find the delinquent style appealing and to mimic it as a way to demonstrate autonomy from parents, win affiliation with peers, and hasten social maturation. However, because their predelinquent development was normal, most adolescence-limited delinquents are able to desist from crime when they age into real adult roles, returning gradually to a more conventional lifestyle. (pp. 49-51)

According to Moffitt's summary of her taxonomy, although the antisocial behaviors of various adolescents may appear to be similar on the surface, they most likely developed along very different pathways that lead to very different outcomes depending on whether or not these behaviors had an onset early in childhood or only in adolescence. The implication is that distinguishing which type of onset best describes a child's antisocial behaviors will be critical in identifying appropriate combinations of developmental periods and treatment targets for effective prevention and intervention programs.

One example of the differential targets of treatment for the two types is parental monitoring, which was dealt with previously in the discussion of social learning theory. As seen from Moffitt's (2003) description above, central to the adolescent-limited type is the angst that arises from the gap between an adolescent's drive for autonomy and their limited opportunities to exert this autonomy. Thus, efforts by parents to exert further control via monitoring should not be expected to decrease adolescent antisocial behavior among those with an adolescent-onset of such behaviors (Moffitt, 2003). There is also empirical support, such as one study in which teens



actively influenced the amount of information their parents have access to, and thus asserted their autonomy by limiting their parents' monitoring, meaning that parental monitoring did not decrease antisocial behaviors (Kerr & Stattin, 2000). This null or even negative effect of parental monitoring appears to be specific to the adolescent-onset subtype, as it exacerbates the angst unique to this subtype. Interestingly, parental monitoring is not typically mentioned as either a risk or protective factor with regard to the early-onset subtype.

Despite this seeming incongruence with social learning theory, the theories are not entirely incompatible. Most saliently, the conceptualization of the etiology of the early-onset subtype is similar to social learning theory in that both strongly emphasize the role of early social interactions, and in particular the responses of formative adults to both the child's early antisocial and pro-social behaviors. Moffitt made clear this similarity when she spoke of her theory's "argument that antisocial behavior becomes persistent because a child's early difficult behavior provokes harsh treatment or rejection from parents, teachers, and peers, which in turn promotes more difficult child behavior" (Moffitt, 2003, p.54). Both theories also acknowledge that innate and genetic risk factors can interact with the child's environmental risk or protective factors in determining the possible expression of antisocial behaviors. While it is clear that the early-onset versus late-onset taxonomy appears to emphasize innate and genetic factors to a greater degree than does social learning theory, this does not appear to be a fundamental disagreement between the two theories.

Another similarity with social learning theory is that there is a good deal of empirical support for the early-onset, life-course-persistent versus late-onset, adolescent-limited taxonomy of antisocial behaviors. Moffitt herself, in collaboration with several colleagues, has evaluated the theory's empirical support via a longitudinal study named the Dunedin Multidisciplinary

Health and Development Study. Several findings from this longitudinal investigation have lent credence to the claims made by the early-onset versus late-onset taxonomy. For instance, it was found that several of the hypothesized individual and family risk factors predicted the life-course-persistent subtype, and that the adolescent-limited subtype had a stronger association with delinquent peers. Individual and family risk factors from these findings included uncontrolled temperament, neurological abnormalities and delayed motor development at age 3, low intellectual ability, memory and reading difficulties, mothers with poor mental health, mothers who were observed to be harsh or neglectful and/or displayed harsh and inconsistent discipline, etc. These findings also indicated that, in contrast to the early-onset subtype, individuals in the adolescent-limited subtype experienced an average or above average background with regard to risk factors such as poor parental psychological well-being, harsh or neglectful parenting, low family socioeconomic status, or peer rejection (Moffitt, 2003). It should be noted, here, that several of the parental risk factors found to predict the early-onset, life-course-persistent subtype are similar to those laid out by social learning theory. Also of interest, the Dunedin study also found that only very few males exhibited no antisocial behavior throughout their development, further supporting the notion that adolescent-limited antisocial behaviors are near normative (Moffitt, 2003).

In addition, Moffitt (2003) makes a point to highlight that there is convergent support for the theory from outside studies. In particular, various twin and adoption studies have yielded strong evidence for the notion that there are important heritable factors associated with both antisocial behaviors which present early in life and which persist through the lifetime, whereas only situational and shared environment factors have been linked to the late-onset subtype of antisocial behaviors which desist after adolescence (Dionne, et al., 2003; Rhee & Waldman,

2002; Taylor, et al., 2000). Another outside study cited by Moffitt (2003) found that the adolescent-limited subtype was associated with rebellious rather than aggressive behavior, and that these behaviors were related to the maturity gap issues of striving for autonomy and peer interactions (Piquero & Brezina, 2001).

**Parental factors and the etiology of conduct disorder.** Prior to concluding the etiology section of this review of the literature, it is important to return to an underlying theme that was evident across the discussed treatises of conduct disorder and antisocial behavior. Notably, all of these etiological models and theories emphasized the role of parental factors as being particularly important. This is not a novel concept, as the role of parental factors in the etiology of conduct disorder has often been addressed in the literature (e.g., Connell, et al., 2007; Frick, 1998; Kazdin, 1995; Rhee & Waldman, 2002). For instance, Rhee and Waldman (2002) claimed that among the literature examining environmental influences on antisocial behavior, parenting style was the most frequently cited specific environmental factor. More recently, Connell and colleagues (2007) acknowledged that although problem behaviors have multiple causes, research has shown that familial processes are central to the development of problem behavior in early childhood and adolescence.

While it is not the only significant parental factor with regard to conduct disorder, one of the most salient parental factors that has received wide empirical support for being related to the etiology of conduct disorder is parental supervision or monitoring. Specifically, lower levels of supervision and monitoring have been identified as risk factors for conduct disorder (e.g., Connell et al., 2007; Frick et al., 1992; Frick, 1998; Loeber & Stouhamer-Loeber, 1986; Rhee & Waldman, 2002). Of note, Kerr and Stattin (2000) pointed out that parental monitoring has most often been operationalized in the literature as the amount of knowledge parents have about their

children's activities, whereabouts, and associates. However, these researchers claim that *how* parents attain such information is also relevant. They even created a scale which not only measures the knowledge parents have about their children, but also contains subscales to tap into three possible sources of information for parents: child disclosure, parental solicitation, and parental control (Kerr & Stattin, 2000).

Parental psychological well-being is another parental factor (which may interact with parental monitoring) in the etiology of conduct disorder. In general terms, there is a good deal of research on the relation between poor parental psychological well-being, such as the relation between parents suffering from depression and an increased risk for psychopathology in children (e.g., Frick, 1998; Goodman & Gotlib, 1999). Further, there is some support in the literature for the specific relation between poor parental psychological well-being and conduct disorder (Frick 1998; Kazdin, 1995; Moffitt, 2003). In one attempt to identify the mechanism behind the relation between poor parental psychological well-being and conduct disorder, Frick (1998) wrote in his review of the literature that “the effects of parental psychopathology may be mediated in part by the disruptions in parenting behaviors caused by parental maladjustment” (p. 51). Frick went on to specifically identify parental depression as being related to multiple negative outcomes in children including conduct disorder, along with parental substance use and antisocial behavior. While there is not yet an abundance of literature addressing the relations between parental psychological well-being and conduct disorder, it appears that many leaders in the field recognize that parental psychological well-being is an important factor to consider, This is evidenced by calls for more research in this area, such as from the workgroup charged with evaluating possible changes to the conceptualization of conduct disorder for the DSM-V (Moffitt, et al., 2008). Unfortunately, despite the documented recognition that parental

psychological well-being plays an important role in the development and maintenance of conduct disorder, it appears that the most popular interventions for conduct disorder do not effectively target this risk factor, as will be demonstrated in the following section.

### **Common Conduct Disorder Interventions: Overall Efficacy and Match with Etiology**

In a 2005 article, Lilienfeld reviewed the available empirical data on the conduct disorder interventions which were most common at the time. In this article, Lilienfeld (2005) identified pharmacology, peer group interventions, and boot camps as “scientifically questionable treatments” based on either mixed or non-existent empirical support. Conversely, Family Functional Therapy, Parent Management Training, and Multisystemic Therapy were all identified as “empirically supported treatments” based on the empirical evidence supporting the efficacy of all three.

Drawing on the earlier discussion of the importance parenting factors play in the development and maintenance of conduct disorder, it should not be surprising to learn that all three of the empirically supported treatments identified by Lilienfeld (2005) involved a strong parental component, while the three scientifically questionable treatments identified did not. The main objective in Family Functional Therapy is identifying “the underlying functions of family members’ maladaptive behaviors and encouraging them to find more constructive means of satisfying these functions” (Lilienfeld, 2005, p. 763). Parent Management Training works under the assumption that parents unwittingly reinforce coercive behaviors in their child, and thus aims to re-train parents to reinforce pro-social behaviors instead. In Multisystemic Therapy, the emphasis is to expose the child to pro-social peers, as well as to improve family cohesion parental discipline (Lilienfeld, 2005).

In addition to the interventions included in Lilienfeld's article, several researchers and research groups have developed their own experimental interventions aimed at treating conduct disorder. Included in these interventions are Fast Track (Dodge & McCourt, 2010) and Early Risers (August, Bloomquist, Lee, Realmuto, & Hektner, 2006; Bernat et al., 2007). Fast Track was an intervention conducted over 10 years, focusing on children who were high risk for conduct problems. The intervention included several components, utilizing parents, teachers, and peers both in the home and at school. Specific to parents, risk factors targeted included poor behavior management, and low levels of supervision. Analysis of the intervention yielded significant improvements in parenting behaviors. However, there was no significant effect of the intervention on the diagnosis of conduct disorder, although an interaction was detected suggesting that the intervention had a significant effect on conduct disorder diagnosis for children who represented the highest risk at baseline (Dodge & McCourt, 2010).

Similar to the multiple-component design of Fast Track, the Early Risers intervention includes five components: community building and peer support activities at a summer program, separate child groups and family skills groups for children and parents, family support, and a monitoring and mentoring school support program. For the parent specific components, parents were exposed to expert speakers during family skills groups and were provided with support strategies as needed following a check-in every three months. As with the Fast Track study, no significant effect was found for intervention on the diagnosis of conduct disorder after six years (Bernat et al., 2007).

## **Problem Statement and Hypotheses**

### **Statement of the Problem**

Clearly, some of the interventions discussed above have demonstrated significant efficacy in the treatment and prevention of conduct disorder, while others have shown mixed or limited efficacy. Regardless, it is important to continue to evaluate all of these interventions to investigate whether or not their efficacy can be improved even further. One method of identifying possible ways to improve the above-mentioned interventions is to evaluate how well these interventions target empirically supported etiological factors of the disorder.

In evaluating the interventions detailed above through this lens, it is interesting to note that while each of the interventions targeted parental factors thought to be related to conduct disorder, such as monitoring, they did so by providing education to parents about effective parenting techniques; and by teaching parents how to implement these techniques. It is as if there is an underlying assumption that parents engage in poor monitoring simply because they are uneducated about the effects of such parental behavior or do not possess the knowledge of how to monitor their children more effectively. Thus, one potential criticism of the interventions described above is that they may be missing an important piece; that parental psychological well-being may also play a significant role. For instance it may be that poor or low parental monitoring is at times the result of parental poor psychological well-being (such as parental depression), rather than a simple lack of information, education, or behavioral skills. Given this potential oversight, it is important to further investigate this relation since stronger empirical links between issues such as parental depression, low parental monitoring, and conduct disorder would likely lead parental psychological well-being to be integrated as an additional target of treatment within existing interventions for conduct disorder. Even more importantly, this would hopefully further increase the overall efficacy of these interventions.

### **The Present Study**

The primary goal of this study is to further the knowledge base with regard to the potential implications of addressing parental depression in the treatment of conduct disorder, with a focus on how parental monitoring might interact with both parental depression and adolescent conduct disorder behaviors. Although there is not a globally agreed upon definition of parental monitoring, it has been pointed out that the common practice has been to measure parental knowledge, even in studies which purported to measure parental monitoring behaviors (Kerr & Stattin, 2000; Racz & McMahon, 2011). Thus, for the sake consistency, the current study conceptualized parental monitoring as the amount of knowledge a parent has about his or her adolescent's activities, whereabouts, and associations. However, it is likely that the way in which a parent goes about acquiring this knowledge may affect the relation between the amount of knowledge a parent has about his/her adolescent and the level of that adolescent's conduct disorder behaviors. Therefore, this study utilized Kerr and Stattin's (2000) measure of monitoring, which taps into parental knowledge and also contains subscales to measure parents' sources of information. A more detailed account of all measures used in this study is presented in the chapter on methodology.

In the pursuit of the stated primary goal of this study, there were some key contextual factors that affected the study design. First, this study was designed to specifically explore the developmental period and context wherein parental monitoring is thought to have the most influence on conduct disorder behaviors. As previously discussed the role and influence of parental monitoring on children and adolescents vacillates across settings and age groups, and thus it is critical to take this developmental arc into account when selecting a target population for study. According to social learning theory, parental monitoring is thought to be most effective in later childhood and adolescence, when children are developing their environmental

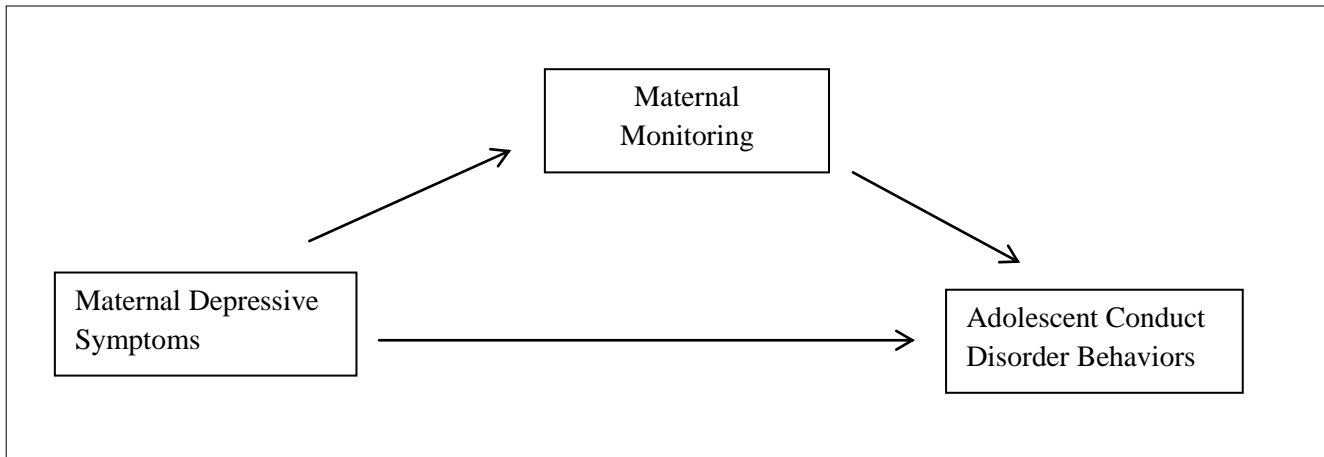


niche and parents' role in the process shifts from modeling and reinforcement to monitoring and titrating (Snyder, Reid, & Patterson, 2003). Adolescence is also the time deviant peer associations present the most risk (e.g., Huang, et al., 2001; Snyder, Patterson, & Reid, 2003). Thus, while parental monitoring is an important protective factor worthy of further research, this study examined parental monitoring specifically at the age of adolescence, when it is most salient.

Secondly, it is also important to remember that according to the early- vs. late-onset taxonomy increased monitoring efforts in adolescence will likely not be effective with the late-onset subtype; since at its root this type of antisocial behavior is driven by a drive for more autonomy, and thus efforts to further limit autonomy will likely only increase the antisocial behaviors (Moffitt, 2003). Therefore, this study included measures to delineate between early- and late-onset subtypes in order to detect possible differences in the effect of parental monitoring on adolescent conduct disorder behaviors, given different contexts.

It is important to point out that due to the exploratory nature of this study and to the fact that testing the effects of the parents' gender on the possible relations between parental depression, parental monitoring, and adolescent conduct disorder behaviors fell outside the scope of the current study, only maternal factors were measured. Thus, this study focused only on the potential relations between maternal depression, maternal monitoring, and adolescent conduct disorder behaviors (as depicted in Figure 3.1). Another important caveat to make clear at this point is that while the current study narrowly focused on these potential relations as a means of evaluating one possible improvement to existing interventions for conduct disorder, the narrow scope of this study was not meant to discount the importance of other environmental (e.g., social contingencies, modeling, the maturity gap) or neurobiological factors previously covered in the

discussion of the theoretical treatise and empirical findings concerning the etiology of conduct disorder. While this study's narrow focus excludes these other factors, it does so in order to emphasize an association pattern which has not yet been fully investigated, and which could improve clinical intervention and prevention programs.



*Figure 3.1* Association pattern under investigation. This figure displays the association pattern under investigation, which includes how maternal depressive symptoms, maternal monitoring, and adolescent conduct disorders may all be associated.

### **Hypotheses**

Based on the current and somewhat limited body of knowledge regarding the relations between parental psychological well-being, parental monitoring, and conduct disorder, the focus of the present study will be to further investigate this relationship through surveying mothers of adolescent children. Specifically, this study will address two major aims: 1) to replicate earlier findings of a significant relation between low maternal monitoring and higher rates of conduct problem behaviors in children; and 2) to explore the possibility that maternal monitoring is a mediator of the relation between maternal depression and adolescent conduct disorder behaviors. In order to properly address these primary aims and to facilitate understanding of how to translate the findings of this study to the real-world treatment of conduct disorder, the study will

also address three secondary aims which are meant to provide context to the possible relation between maternal depression, maternal monitoring, and adolescent conduct disorder behaviors. These secondary aims include examinations of 3) whether certain demographic variables are significantly associated with level of maternal depression, level of maternal supervision, or level of conduct disorder behaviors; 4) if, above and beyond the relation between the level of knowledge a mother has about her adolescent's activities and the adolescent's conduct disorder behaviors, there is also a significant association between the source of the mothers' information and the adolescent conduct disorder behaviors; and 5) whether the hypothesized mediational relationship holds true for both the early- and late-onset subtypes of conduct disorder. These primary and secondary aims are reflected in the specific hypotheses of this study, which are as follows:

H1: It is hypothesized that none of the demographic variables measured for this study (e.g., mother's age, adolescent's gender, race/ethnicity, mother's education level, socioeconomic status, and community of residence) will be significantly associated with maternal depression symptoms, level of maternal monitoring, or adolescent conduct disorder behaviors.

H2: It is hypothesized that, in line with previous research, lower levels of maternal monitoring will be correlated with higher levels of adolescent conduct disorder behaviors.

H2a: It is hypothesized that the relation between lower levels of maternal monitoring and higher levels of conduct disorder behaviors hold true only for adolescents identified in the early-onset, life course persistent subtype. Thus, it is hypothesized that lower levels of maternal monitoring will not be significantly related with conduct disorder behaviors for adolescents identified in the late-

onset, adolescent limited subtype. This hypothesis will only be examined if the sample includes enough participants with adolescent children in both the early- and the late-onset subtypes to be tested.

H2b: It is hypothesized that type of information source (e.g., child disclosure, parental solicitation, or parental control) will not account for a significant proportion of the variance in adolescent conduct disorder behaviors, above and beyond what is already accounted for by maternal monitoring.

H3: It is hypothesized that maternal depressive symptoms will be positively associated with adolescent conduct disorder behaviors, and that this relation will be partially mediated by maternal monitoring.

H3a: It is hypothesized that higher levels of depression symptoms experienced by the mother will be positively associated with levels of conduct disorder behaviors by the adolescent.

H3b: It is hypothesized that high levels of maternal depression will be positively correlated with lower levels of maternal monitoring.

H3c: It is hypothesized that low levels of maternal monitoring will be positively correlated with higher rates of conduct disorder behaviors in the adolescent.

H3d: It is hypothesized that controlling for maternal monitoring will significantly reduce the effect of maternal depression on conduct disorder behaviors.

Specifically, it is expected that maternal monitoring will partially mediate the effect of maternal depression on adolescent conduct disorder behaviors.

## **Methodology**

### **Participants**

A sample of 80 mothers of adolescents aged 10-18 was recruited for the current study. This sample size was determined using an online power analysis calculator (Soper, 2012) to calculate the necessary sample size to yield a power level of .80. In testing for a mediation effect, power analyses were run for each individual regression step, as suggested by Kenney (2012). These power analyses assumed a medium effect size, and a type-I error probability of 0.05. Using these criteria, it was calculated that a sample size of 67 would be sufficient to yield a power level of .80. It was expected that data from some participants who filled out the survey would need to be deleted from the sample because the participants did not meet inclusion criteria, or because of missing data. Thus, the decision was made to close the survey after 80 participants had filled out the survey, rather than 67 as suggested by the power analysis.

Participants were first recruited only via church mailing lists from Richmond, VA area churches. However, later in the data collection phase, recruitment was opened up to include utilizing social media posts, as well as sending recruitment emails to personal and professional contacts with requests that the emails be forwarded to their own contacts.. A more detailed account of the recruitment procedures is provided in the Materials and Procedures section below.

For inclusion to the study, participants were informed that they must have shared a residence with their adolescent child for a period of at least 2 years prior to participation in the study, and must have been sharing a residence at the time of the study. They were also informed that they should not fill out the survey more than once (i.e., for a second adolescent).

Due to the exploratory nature of this study, the identified target population included few, if any, specific demographic restrictions. For instance, while the targeted age range for the adolescent was identified in the inclusion criteria as 10-18 years old ( $M = 14.29$ ,  $SD = 2.18$ ), it was decided not to identify a targeted age range for the mother ( $M = 44.81$ ,  $SD = 6.63$ ).

Similarly, gender of the adolescent was not restricted. However, as expected, the split among the adolescents between male and female was approximately even (52.2% male; 47.8% female). Further, there was no specific racial/ethnic make-up identified for the target population. Thus, racial/ethnic identity was not restricted in the sample recruitment procedures. This yielded a sample in which 69.6% of participants identified their race as White/Caucasian, 24.6% identified as Black or African American, 2.9% identified as Mixed Race, 1.4% identified as Asian/Pacific Islander, and 1.4% identified as Hispanic American. For gender of the mothers, 98.6% of participants identified as female, and 1.4% identified as transgendered. A full description of the demographics of the sample can be found in Tables 4.1, 4.2, and 4.3.

With regard to geographic location, the target population originally only included participants in the Richmond, VA area. However, due to trouble recruiting a sample size large enough to produce the necessary statistical power to detect the relations being tested in this study, the target population was re-conceptualized with regard to geographic location. More specifically, the geographic location of the target population was no longer restricted to the Richmond, VA area, and instead was expected to vary to include participants from various localities and states within the United States of America. Unfortunately, due to researcher oversight, an item asking participants to identify where they reside was added only after the majority of participants had already filled out the survey. Thus, it is impossible to provide a summary of participants' geographic locations or attempt to identify any response patterns that could be associated with geographic location.

Table 4.1

*Mothers' demographic variables from the sample.*

<i>Demographic Variable</i>	<i>Descriptives / Frequencies</i>
Mother's Age	$M = 44.81, SD = 6.63$
Mother's Gender	Female = 98.6% Transgendered = 1.4%
Mother's Race/Ethnicity	White/Caucasian = 69.6% Black/African-American = 24.6% Mixed Race = 2.9% Hispanic American = 1.4% Asian / Pacific Islander = 1.4%
Mother's Highest Level of Education Completed	High school diploma / GED = 1.4% Some college, but no degree = 17.4% Associates degree = 2.9% Bachelors degree = 27.5% Some graduate school = 11.6% Completed graduate school = 39.1%
Birth Parent?	Yes = 91.3% No = 8.7%

Table 4.2

*Adolescents' demographic variables from the sample.*

<i>Demographic Variable</i>	<i>Descriptives / Frequencies</i>
Adolescent's Age	$M = 14.29, SD = 2.18$
Adolescent's Gender	Male = 52.2% Female = 47.8%

Table 4.3

*Household demographic variables from the sample.*

<i>Demographic Variable</i>	<i>Descriptives / Frequencies</i>
Household Income	\$0-\$24,999 - 1.5% \$25,000-\$49,999 = 16.2% \$50,000-\$74,999 = 19.1% \$75,000-\$99,999 = 11.8% \$100,000-\$124,999 = 8.8% \$125,000-\$149,999 = 8.8% \$150,000-\$174,999 = 4.4% \$175,000 - \$199,999 = 10.3% \$200,000 and up = 19.1% Missing = 1.5%
Neighborhood	Suburban = 79.7% Rural = 11.6% Urban = 8.7%
Number of Children in Household	$M = 1.84, SD = .93$
Number of People in Household	$M = 3.96, SD = 1.05$

## Measures

**Demographics.** Demographic information about the mothers and their adolescents was collected via open-ended and multiple choice items. All demographic survey items are listed in Appendix B. As mentioned above, although an item was added asking participants to name the city where they currently reside was added after recruitment was opened up beyond the Richmond, VA area, this item was only asked of 27 out of the 69 participants, and thus was not used in any summaries or analyses. Demographic questions specific to the mothers included items about the mothers' age, gender, race/ethnicity, and education level. Demographic questions specific to the adolescents included age and gender. Additionally, household demographics were measured by asking about participants' community of residence (urban, rural, or suburban) and



their approximate yearly household income. Other household demographic items asked how many individuals currently live in the participant's household; if the participant is the birth mother of the adolescent; how many birth parents of the adolescent in total live in the household; how many siblings of the adolescent live in the household; and the age and gender of each of these siblings.

**Maternal depression symptoms.** Maternal depression symptoms were measured using the Patient Health Questionnaire-9 (PHQ-9), a 9 item self-report instrument (see Appendix C). The PHQ-9 is designed to measure the severity of depressive symptoms in an individual. It is currently used in both clinical and research settings for diagnosis of a depressive disorder, in addition to tracking symptoms of depression (Cannon, et al., 2007). The PHQ-9 instructs the individual to rate themselves on a 4-point Likert scale (0-3) based on their frequency of each depressive symptom, yielding a scale score range of 0-27. Higher overall scores on the PHQ-9 are indicative of more severe depressive symptoms. Internal consistency of the PHQ-9, as measured by Cronbach's alpha, ranges between .84 and .89 in various studies (Delgadillo, et al., 2011; Kroenke, et al., 2001). For the current study, Cronbach's alpha was .85. Throughout the rest of this paper, the variable of maternal depression symptoms may be referred to as such, or by simply referenced as PHQ-9 scores.

The PHQ-9 has demonstrated strong specificity in differentiating between clinical forms of depression and non-clinical depressive symptoms or no depressive symptoms (Kroenke, et al., 2001). It has shown significant correlations with other measures of depression including those from the Medical Outcomes Study Short-Form General Health Survey (SF-20) and the Structured Clinical Interview for DSM Disorders (SCID) (Cannon, et al, 2007; Kroenke, et al.,

2001). Further, the sensitivity of the PHQ-9 has been demonstrated, in that higher scores indicate more severe depressive symptoms among clinical samples (Kroenke, et al., 2001).

**Maternal monitoring.** Maternal monitoring was assessed by using a scale adapted from Kerr and Stattin's (2000) measure of parental monitoring. The adapted scale used in the current study can be found in Appendix D. Kerr and Stattin's measure was designed for parent and child reports, and includes nine questions. These items were adapted to be applicable to the participants of the present study. Questions were answered on a 5-point Likert scale. Kerr and Stattin's items are designed to tap into parental monitoring, as operationalized by the amount of knowledge parents have about their child or adolescent's activities, whereabouts, and associations. This is also how maternal monitoring was operationalized for the current study. For the purpose of this study, eight of the nine responses on the adapted scale were reverse scored so that high scores indicate lower levels of maternal monitoring and low scores indicate higher levels of parental monitoring. Kerr and Stattin observed a high level of internal consistency for parent report on their parental monitoring scale, with a Cronbach's alpha of .82. For the current study, the observed Cronbach's alpha for the adapted scale was .74.

**Maternal sources of information.** Based on the conceptualization of parental monitoring from Kerr and Stattin, the current study included a test for the possible significant effects of maternal sources of information, above and beyond the effect of maternal monitoring, on adolescent conduct disorder behaviors. To measure these potential information sources, an adapted version of Kerr and Stattin's (2010) measure was used (see Appendix E). As discussed earlier, Kerr and Stattin's (2010) parental monitoring measure also includes three subscales, each of which includes 5 self-report items which ask participants to respond on a 5-point Likert scale. These subscales are thought to tap into the three theorized sources of parental information: child

disclosure, parental solicitation, and parental control. Higher scores on the child disclosure subscale, for example, indicate higher levels of information gathered from child disclosure. The developers reported that a Principle-components factor analysis of the 15 items showed three clear factors (i.e., child disclosure, parental solicitation, and parental control) (Kerr & Stattin, 2000). The developers also reported a Cronbach's alpha of .80 for parent report on the child disclosure subscale (Kerr & Stattin, 2000), while it was .69 in the current study. For parental report on the parental solicitation subscale, the Cronbach's alpha was measured at .69 by the developers (Kerr & Stattin, 2000), and .71 in the current study. Cronbach's alpha for parent-report on the parental control subscale was measured at .75 by the developers (Kerr & Stattin, 2000), but just .29 in the current study. Given the poor internal consistency of this subscale, and the fact that scores from the parental control subscale were highly skewed in the positive direction (skewness statistic = 2.29), it was decided that the parental control subscale was not suitable for use in secondary analyses for this study. However, child disclosure and parental solicitation were still used.

**Adolescent conduct disorder behaviors.** Conduct disorder traits and behaviors were measured by summing scores from two subscales of the school-age Child Behavior Checklist (CBCL 6/18), which was developed by Achenbach (1991) and revised with new normative data in 2001 (Achenbach & Rescorla, 2001). Specifically, the Aggressive Behavior (18 items; listed in Appendix F) and the Rule-Breaking Behavior Scales (17 items; listed in Appendix G) were used in this study to measure conduct disorder behaviors and traits. Each subscale asked mothers to rate their adolescent's behavior using a 3-point Likert scale, in which 0 = not true, 1 = somewhat or sometimes true, and 2 = very true or often true. Higher scores on each scale indicate more severe problems within the aggressive behavior and delinquent behavior domains,

respectively. According to the test manual, the Cronbach's alpha measure of internal consistency is .94 for the Aggressive Behavior scale (.84 in the current study), and .85 for the Rule-Breaking Behavior scale (.61 in the current study). In the following sections of this paper, the construct of adolescent conduct disorder behaviors may be referred to as such, or may simply be referenced as CBCL scores, even though the scores calculated for this study involve only two subscales of the CBCL/6-18, and not the entire checklist.

Test-retest reliability (mean 8 day interval) was tested by the developers using Pearson correlations. The Pearson correlation for the Aggressive Behavior scale was found to be .90, and it was observed to be .91 for Rule-Breaking Behavior (Achenbach & Rescorla, 2001). Additionally, both subscales have shown to significantly account for the variance in scores between groups of referred children versus non-referred children (Achenbach & Rescorla, 2001). It should be noted that summing the scores from these two subscales to produce an overall score of conduct disorder behaviors means that conduct disorder behaviors have been operationalized as a continuous variable. In other words, for the present study conduct disorder behaviors were conceptualized simply as the number of behaviors/symptoms reported by the mother; instead of categorically based on whether or not an adolescent met criteria for a conduct disorder diagnosis.

**Conduct disorder subtype.** For the purposes of the testing sub-hypothesis 2a, the CBCL 6/18 (Achenbach & Rescorla, 2001) was also used to identify and delineate adolescents who could be characterized with early-onset conduct disorder, or late-onset conduct disorder. Specifically, adolescents who fell in the borderline clinical or clinical ranges on the Aggressive Behavior subscale were classified in the early-onset subtype. Adolescents who fell in the borderline clinical or clinical ranges on the Rule-Breaking Behavior subscale were classified in the late-onset subtype. Those who did not fall in the borderline clinical or clinical ranges for

either subscale were not classified in either subtype. The rationale for these classifications is that the Aggressive Behavior subscale is thought to have relatively stable scores over time, and is thought to tap into features characteristic of the life-course persistent subtype of conduct disorder, such as antisocial personality and physical violence (Moffitt, 2003). Conversely, it is thought that the Rule-Breaking Behavior scale, which has been modified from early versions of the Delinquency scale, is associated with the adolescent limited subtype because scores peak in adolescence, and it is thought to capture features of the subtype, such as rule breaking (Moffitt, 2003).

It should be noted that while conduct disorder behaviors in this study were operationalized as continuous, without requiring that a critical level of behaviors/symptoms be met for an actual diagnosis of conduct disorder, the same is not true for how cases were classified into subtypes. This is because, for the purposes of testing sub-hypothesis 2a, it was necessary to be able to reasonably infer that the cases classified in the late-onset subtype, and only those cases, experience the maturity gap issues that are thought to be a primary and unique driver of this subtype (Moffitt, 2003). It is this distinction, the higher saliency of maturity gap issues in late-onset conduct disorder, and the relatively lower salience of such issues in the early-onset subtype, that informed sub-hypothesis 2a (for reasons explained in Chapter 2). However, maturity gap issues were not measured for the current study. Instead, their presence was inferred based on classifications into subtypes based on scores on the Rule-Breaking and Aggressive Behavior subscales of the CBCL (Moffitt, 2003). Conceptually, when rule-breaking or aggressive behaviors exist only in the context of normative development and behavior it would not be accurate to assume that the individual falls into one of the subtypes of conduct disorder, and thus it is not accurate to claim that the associated characteristics of each subtype (e.g.,

maturity-gap issues) are present. Thus, this variable was operationalized categorically, so that normative aggressive or rule-breaking behaviors were not collapsed in with clinically significant levels of these behaviors, because only the clinically significant levels of these behaviors indicate the presence of other factors such as maturity gap issues.

## **Materials and Procedures**

**Sample recruitment.** Recruitment of a community sample for this study began with contacting four Richmond, Virginia area churches. The decision to sample from churches was made because of the associated likelihood of reaching families with adolescents in the community. Administrators at each church were asked if they would be willing to disseminate recruitment materials to members of their church, along with a link for the anonymous web-based survey. Each church administrator was also provided with information regarding the nature and purpose of this research, as well as the safeguards in place to protect participant's anonymity. For instance, as part of these safeguards the researchers were not directly involved in the dissemination of any recruitment materials among church members, and thus were not made aware of any identifying information of these potential participants, such as their names or mailing addresses. Further, since no identifying information was collected as part of this study, and since only the researchers were able to access the completed online surveys, the decision of whether or not to participate and the answers provided would not affect participants' standing in the church community in any way.

All four of the originally identified churches agreed to disseminate recruitment materials to their church members. However, after further discussion with the pastor of one of these churches, it was mutually decided that recruitment from this church membership population would not be prudent since the vast majority of its members are not fluent in English and would

not be able to complete the surveys without a translator. Thus, three churches in total mailed out hard copies of a recruitment letter to their members. These recruitment letters provided potential participants with information about the study, including an overview of the study's purpose, procedures, inclusion criteria, safeguards, and the web URL for the online survey. The administrators from the three churches were given the option to mail the recruitment letters to all member families with adolescents only, instead of all total members, if they wished to reduce the number of letters being sent out. However, they were instructed that the size of the group receiving mailing letters should not be reduced further (i.e., they should not be sent to only some families with adolescents). Researchers provided the churches with hard-copies of the recruitment letter, as well as envelopes and postage for their mailing.

In addition to the mailing of hard-copy recruitment letters, the churches were also given the option to email an electronic version of the recruitment letter with a hyperlink to the web-based survey; to publish information about the survey in church publications and/or pamphlets; and to have a church administrator or other staff member mention the study directly to church members.

Despite these recruitment efforts, participation among the church memberships was limited. Thus, recruitment procedures were eventually modified to include electronic recruitment in the form of social media postings and recruitment emails to personal and professional contacts of the researchers. As with participants recruited from the church communities, no identifying information was collected, and thus the researchers had no way of identifying who chose to participate or how any individual responded to survey items. Further, as mentioned earlier, only the researchers had access to the data collected. This means that the decision of whether or not to complete the survey, and the answers provided if the survey was completed, have not had

bearing on the participants' relationships or standing in their community. These modified recruitment procedures meant that participants were henceforth recruited regardless of their geographic location or affiliation with any church or other religious institution.

Following the modified recruitment procedures, email messages were sent to personal and professional contacts of the Principal Investigator and graduate student researcher. The recipients of these emails were chosen primarily based on their access to populations in the community with a high likelihood of meeting eligibility criteria (e.g., members of professional, school, or religious organizations who were in contact with a large group of mothers of adolescents). The purpose of these messages was to gauge interest and willingness of the recipient to forward the official email advertisement for the online survey to his or her own contacts. Those who indicated a willingness to do so were sent the official recruitment email advertising the study. This recruitment email provided information about the study, including an overview of the study purpose, procedures, inclusion criteria, and safeguards. The encrypted (https) URL address for the web-based survey was also included, and interested participants were instructed to visit the webpage for the survey. This recruitment email also invited recipients to forward the email to others who might have interest in participating and who meet the inclusion criteria.

Additionally, recruitment information approved by Virginia Commonwealth University's Internal Review Board (IRB) was posted on the social media website Facebook on three separate occasions. These postings included information regarding inclusion criteria and the anonymous nature of the survey. Interested participants were encouraged to follow the presented hyperlink to the survey's webpage, in order to view more detailed information regarding the purpose of the study, the potential risks and benefits, and the safeguards in place to protect confidentiality (all



of this information was presented as part of the informed consent disclosures on the introductory page of survey's website). The social media postings also encouraged viewers to share the information with their own contacts who might have interest in participating and might meet the inclusion criteria.

**Data collection.** Data collection for this study was completed using a web-based and completely anonymous survey using the web-based program 'Survey Monkey'. Survey Monkey provides a secure and confidential way for participants to enter their responses to survey questions, and for the researcher to access these responses. This format also made it possible to combine all measures into one continuous survey, although measures were separated by pages. The survey did not ask for any identifying information, such as names, addresses, dates of birth, etc. It also did not track IP addresses of the computers used to complete the survey. Instead, participants were identified using randomly generated identification numbers. The uniform resource locator (URL) for the survey was encrypted (https) for further security. The data was periodically downloaded by the researchers and saved in an encrypted (password protected) SPSS computer file on a password protected laptop, even though it contained no identifying information. Only the researchers had access to the data collected.

Upon visiting the URL, interested participants were greeted with an introductory page which provided more details regarding the nature and purpose of the study, possible risks and benefits of the study, the safeguards used to insure anonymity, the types of survey questions which were to be asked, and the completely voluntary nature of participation in the study. The topics covered in this introduction were designed to meet all the components of informed consent, as provided on the VCU IRB website and informed consent form template. Interested participants, after reading through this introduction, were asked to indicate their consent by

clicking a continue button. Participants who clicked “continue” were then presented with the survey’s demographic questions and four research measures, followed by an optional comments and feedback section. Upon completion of the survey, all participants were provided with referral information for psychological services to use if needed, regardless of their responses.

### **Data Checking.**

*Inclusion criteria and missing values.* Once 80 participants had filled out the online survey, the results were downloaded and converted to SPSS files for analysis. Prior to conducting any analyses of the study’s hypotheses, however, the data was inspected for missing values and checked to ensure that cases met inclusion criteria. Of the 80 cases collected, one case was deleted because the respondent was a male without children. All other cases appeared to meet inclusion/exclusion criteria. However, 10 remaining participants failed to complete any items on at least one of the three primary scales of interest (the PHQ9, the Kerr & Stattin monitoring measure, and the Aggressive Behavior and Rule-Breaking Behavior subscales of the CBCL). Thus, these 10 cases were also deleted, leaving 69 cases in total. Data was then visually inspected for suspicious response patterns, none of which were found. Thus, all 69 remaining cases were kept. Each of these cases was subsequently given an ID number (1-69).

The next step in examining the data for missing values involved combing responses to identify cases where all three of the major scales were completed, but one or more items were skipped. A minimum completion rate of 80% for each scale was set as the standard for inclusion in data analyses for this study. It was found that 17 of the remaining 69 participants missed one or more items across the three major scales of interest (maternal depression symptoms, maternal monitoring, and adolescent conduct disorder behaviors) and the sources of information subscales

(child disclosure and parental solicitation). However, each of these 17 participants completed at least 80% of the items from each scale, and thus all were included in the later analyses.

In all, 48 of the 69 participants (70%) answered every item on every scale that was used in analyses for this study. The completion rates for each of the 17 participants who missed one or more item on one or more of the scales are listed in Table 4.1. For readability, if the participant completed 100% of the items on a particular scale it was not marked in the table as “100%”, but rather left blank with the marking “----”. It should be assumed that any participant who is not included in Table 4.1 completed 100% of the items for all scales that were used in data analysis.

Since each of the variables of interest for this study were operationalized using scale scores (e.g., using PHQ-9 scores to represent maternal depression), not addressing missing values would have led to skewed comparisons between cases with missing values and cases without missing values. Thus, scale scores were computed using the average item score, rather than the summation of item scores, to account for missing values. Prior to doing so, however, two adjustments to item scores for all participants were necessary.

**Score adjustments.** The first score adjustment involved subtracting from item scores to account for incorrect value labels, so that normative data provided for the scales could be used to make meaningful interpretations. For instance the PHQ-9 has a range of possible item responses of 0-3, and the CBCL has a range of possible item responses of 0-2. Further, the summed scale scores, based on the item response values which range from 0-3 or 0-2 respectively, can be used to aid interpretation thanks to extensive normative studies by the scale developers. However, by default SPSS assigned value labels of 1-4 for the PHQ-9 and 1-3 for the CBCL. Thus, 1(one) was subtracted for each item on both of these measures so that the ranges of participants’ scale scores would fall in line with the originally developed and normed scales.

Table 4.4

Completion percentages for participants who missed one or more items.

<i>Participant ID Number</i>	<i>PHQ-9</i>	<i>Kerr &amp; Stattin Monitoring Scale</i>	<i>CBCL Scales</i>	<i>Child Disclosure Subscale</i>	<i>Parental Solicitation Subscale</i>
3	----	89%	----	----	----
4	----	----	----	80%	----
10	89%	----	----	----	----
14	----	----	86%	----	----
16	----	----	97%	----	----
17	----	----	----	----	80%
19	----	89%	----	80%	----
20	----	----	97%	----	----
25	----	89%	----	80%	----
30	----	----	----	80%	80%
32	----	----	----	----	80%
38	----	----	80%	----	----
42	----	----	94%	----	----
51	----	----	94%	----	----
52	----	89%	94%	80%	----
63	89%	----	----	----	----
64	----	----	----	----	80%

The second adjustment involved the reverse coding of items one through eight on the Kerr & Stattin monitoring scale, all items but the third and fourth items on the Child Disclosure subscale, and all items on the Parental Solicitation and Parental Control subscales. Conceptually, the purpose behind this recoding was so that higher scores would indicate lower levels of monitoring. Thus higher scores on all three scales would be in line with study hypothesis (i.e., that the relation between higher levels of depression and higher levels of conduct disorder behaviors is mediated by lower levels of monitoring). The recoding of the subscales was so that the interpretation of higher scores would be consistent between the subscales and the monitoring scale (i.e., higher scores indicates less monitoring in terms of knowledge and information

gathering). The ninth (and final) item on the monitoring scale was already defined in such a way that higher scores indicated a lower level of monitoring. Thus, this item was not reverse coded. The same was true of the third and fourth items of the Child Disclosure subscale, where higher scores already indicated less disclosure.

***Addressing missing values.*** Once the above-mentioned adjustments were made to item scores, missing values were addressed. For each of the scales, the sum of each participant's responses on the items of the scale was divided by number of items completed to attain the average item score. This average item score was then multiplied by the total number of items on the scale to yield a scale score henceforth referred to as the "computed total". For those participants who did not miss any items, the computed total scale score and the summed total scale score were identical. However, for those participants who did miss one or two items, the computed total scale score was slightly higher than the summed total scale score. For instance, for a participant who missed an item on the PHQ-9, the sum of her responses on the eight items completed was divided by eight to compute the average item score. This average item score was then multiplied by nine (the total number of items in the scale), yielding a computed total scale score slightly higher than her summed total scale score. Although no formal name seems to exist for this procedure, Schafer & Graham (2002) have suggested the term "ipsative mean imputation" (p. 158).

***Relevant statistical assumptions for mediated regression analyses.*** The last step in data checking, prior to conducting the analyses for testing the stated hypotheses, involved checking to ensure that the relevant statistical assumptions were met (Tabachnick & Fidell, 2007). First, the assumption of normality was checked for the computed total scale scores of each scale used. Skewness and Kurtosis statistics were calculated, and a histogram and Q-Q plot was generated

for each variable. Only the PHQ-9 variable showed signs of skewness (1.43) and kurtosis (1.31). The skewness and kurtosis statistics were below 1 for the monitoring, conduct disorder behaviors, parental solicitation variable, and parental control variables. Thus, a log transformation was performed only with the PHQ-9 computed total scores. This transformation yielded acceptable skewness (0.29) and kurtosis statistics (-1.13). Further, the histogram and Q-Q plot for the maternal depression variable indicated a roughly normal distribution. Thus, moving forward the discussion of PHQ-9 scores will refer to the scores which underwent the log transformation, unless otherwise noted.

The next steps in checking assumptions involved checking for issues with multicollinearity, multivariate outliers, homoscedasticity, and linearity. All variables of interest met each of these assumptions, so no further actions were taken to clean the data.

## **Data Analyses and Results**

### **Demographic Variables**

The first hypothesis was tested by calculating correlations between each demographic variable and each of the three main variables of interest. As seen in Table 5.1, mothers' age, self-identified race/ethnicity, and level of education were not significantly correlated with mothers' level of depression (before the log transformation), the level of maternal monitoring, or the conduct disorder behaviors of the adolescent child. Similarly, there were also no significant correlations between the three variables of interest and type of community (urban, suburban, or rural), the total number of individual living in the household, or the number of children aged 18 or younger living the home. The identified approximate household income was negatively correlated with mothers' depression symptoms,  $r(66) = -.27, p = .04$ , but not significantly correlated with maternal monitoring or adolescent conduct disorder behaviors. Adolescents'

gender was not significantly related to any of the three variables of interest, however the age of the adolescent was positively correlated maternal monitoring,  $r(64) = .32, p = .01$ . Of note, because the maternal monitoring scale was reverse coded, this positive correlation indicates that older ages of the adolescent were associated with *less* maternal monitoring. Given the significant correlations between household income and maternal depression symptoms, as well as between adolescents' age and maternal monitoring, the first hypothesis was only partially supported.

Table 5.1

*Correlations between demographic variables and variables of interest.*

	<i>CBCL</i>	<i>Monitoring</i>	<i>PHQ9</i>
Mother's Age	-.019	.219	-.189
Race/Ethnicity	-.024	.022	-.106
Level of Education	.019	-.083	-.039
Household Income	-.219	.050	-.246*
Neighborhood	-.072	-.047	-.147
Adolescent's Age	-.075	.315**	-.125
Adolescent's Gender	.025	-.065	-.053
Birth Parent?	.189	.083	.045
Number of Children in Household	-.013	.014	-.011
Number of People in Household	-.091	-.013	.053

\*\* $p = .01$  (2-tailed)

\*  $p < .05$  (2-tailed)

## **Maternal Monitoring and Adolescent Conduct Disorder Behaviors**

The second hypothesis proposed that the current study would replicate findings from previous studies that showed a correlation between lower levels of maternal monitoring and higher levels of conduct disorder behaviors, when looking at the sample as whole. However, this hypothesis contained two sub-hypotheses to address a more nuanced, and contextual approach to this association. First, sub-hypothesis 2a stated that the relation described above would only hold true for cases where the adolescent would fall into the early-onset subtype of conduct disorder; and not hold true for cases in which the adolescent fell into the late-onset subtype. Secondly, sub-hypothesis 2b was established as a null-hypothesis, stating that the source of mother's information (e.g., child disclosure, parental solicitation, and/or parental control) would not account for a significant proportion of the variance in conduct disorder behaviors, above and beyond what was accounted for by maternal monitoring (as operationalized as the amount of knowledge a mother has about her adolescent).

The second hypothesis was assessed with a test of correlation between Monitoring and the CBCL computed total scale scores. The results indicated that, as hypothesized, there was a significant correlation between maternal monitoring and adolescent conduct disorder behaviors,  $r(67) = .36, p < .01$ .

Due to the fact that only one participant's adolescent was classified in the late-onset subtype (based on cutoff scores for the Rule-Breaking subscale), and only six participants were classified in the early-onset subtype (based on cutoff scores for the Aggressive Behavior subscale), meaningful comparisons between the subtypes were not feasible. Thus, sub-hypothesis 2a was not tested, and cannot be described as either supported or unsupported. However, although no statistical testing comparing the subtypes was performed; descriptive



analyses were run in order to provide case examples of each subtype from this study. The results can be seen in Table 5.3. The information in Table 5.3 can be compared to the demographic descriptives for the entire sample presented in Tables 4.1, 4.2, and 4.3; as well as to Table 5.2 which lists the means and standard deviations for scores across the entire sample on the variables of interest in the present study.

Table 5.2

*Means and standard deviations for scores across the entire sample.*

	<i>Scores</i>
PHQ-9	$M = 3.56, SD = 4.24$
Monitoring	$M = 13.68, SD = 3.05$
Child Disclosure subscale	$M = 8.99, SD = 2.78$
Parental Solicitation subscale	$M = 10.25, SD = 3.08$
CBCL	$M = 6.31, SD = 5.92$
Rule-Breaking Behavior	$M = 1.79, SD = 1.90$
Aggressive Behavior	$M = 4.51, SD = 4.43$

Table 5.3

*Descriptives for comparing late-onset and early-onset subtypes*

	<i>Late-Onset (n=1)</i>	<i>Early-Onset (n=6)</i>
Mother's age	53	$M = 45.00, SD = 6.93$
Mother's race/ethnicity	Black or African-American	White/Caucasian = 66.7% Black/African-American = 33.3%
Mother's Education Level	Some College, but no degree	Some college, but no degree = 33.3% Some graduate school = 33.3% Completed graduate school = 33.3%
Household Income	\$25,000-\$49,999	\$25,000-\$49,999 = 33.3% \$50,000-\$74,999 = 16.7% \$75,000-\$99,999 = 33.3% 125,000-149,999 = 16.7%
Neighborhood	Suburban	Suburban = 83.3% Rural = 16.7%
Number of Children in Household	1	$M = 1.50, SD = .71$
Number of People in Household	3	$M = 3.33, SD = .52$
Adolescent's Age	18	$M = 13.83, SD = 2.48$
Adolescent's Gender	Female	Male = 66.7% Female = 33.3%
Birth Parent?	Yes	Yes = 66.7% No = 33.3%
PHQ-9	2	$M = 7.67, SD = 6.02$
Monitoring	22	$M = 15.50, SD = 2.95$
Child Disclosure subscale	16	$M = 10.04, SD = 3.76$
Parental Solicitation subscale	11	$M = 13.25, SD = 2.09$
CBCL	18	$M = 17.73, SD = 3.47$
Rule-Breaking Behavior	9	$M = 4.23, SD = 1.57$
Aggressive Behavior	9	$M = 13.50, SD = 2.59$

A hierarchical multiple regression model was used to examine sub-hypothesis 2b. The dependent variable for the model was adolescent conduct disorder behaviors, and the independent variable entered in the first block of the model was maternal monitoring. In the second block, the scores on the subscales of child disclosure and parental solicitation were entered. These two subscales represent the sources of information variables. As mentioned previously, the third source of information variable, parental control, was not included in the model due to issues with skewness (skewness statistic = 2.29) and internal consistency (Cronbach's alpha = .29) which brought the reliability of the scale into question. This meant that deriving meaningful interpretations of the subscale scores, or of the results from any statistical analyses involving the subscale, would be nearly impossible.

As expected, the first step, which included maternal monitoring as the only predictor, was significant  $F(1,67) = 9.84, p < .01$ . Maternal Monitoring was shown to account for 12.8% of the variance in conduct disorder behaviors. Adding child disclosure and parental solicitation in the second step made a significant contribution to the model ( $F[2,65] = 4.25, p = .018$ ), and accounted for an additional 10.1% of the variance in conduct disorder behaviors. In this step maternal monitoring, child disclosure, and parental solicitation were all evaluated against each other, whereby the unique contributions of each predictor could be assessed, after accounting for the other two predictors. The unique contribution of child disclosure, which accounted for 10.05% of the variance in conduct disorder behaviors, was significant ( $\beta = .38, t(65) = 2.91, p = .005$ ). However, neither maternal monitoring nor parental solicitation accounted for a significant proportion of the variance on their own when entered into the model with the two other variables. Given that adding the sources of information variables in the second block of the hierarchical regression made a significant contribution to the model, and that child disclosure

uniquely accounted for a significant proportion of the variance in conduct disorder behaviors, sub-hypothesis 2b was rejected.

### **Maternal Depression, Maternal Monitoring, and Adolescent Conduct Disorder Behaviors**

The third and final hypothesis dealt with the major aim of this study, which was to evaluate a possible mediation effect of maternal monitoring on the relation between maternal depression symptoms and adolescent conduct disorder behaviors. This hypothesis was evaluated using Baron and Kenny's (1986) procedure for testing mediation. As such, regression models were run to test if there was a significant direct association between maternal depression and adolescent conduct disorder behaviors (sub-hypothesis 3a; depicted by path c in Figure 5.1); if maternal depression was associated with lower maternal monitoring (hypothesis 3b, depicted by path a in Figure 5.1); if lower levels of maternal monitoring were significantly associated with higher levels of adolescent conduct disorder behaviors (sub-hypothesis 3c; depicted by path b); and if after controlling for maternal depression, maternal monitoring still explained a significant proportion of the variance in conduct disorder behaviors, while at the same time significantly reducing the magnitude of the direct effect of maternal depression on conduct disorder behaviors (sub-hypothesis 3d; depicted by path c' in Figure 5.1). If all four sub-hypotheses hold true, it will support the overall third hypothesis.

As seen in Figure 5.1, sub-hypothesis 3a was supported with a significant relation between maternal depression symptoms and adolescent conduct disorder behaviors,  $F(1,67) = 5.94, p = .017; R^2 = .08; \beta = .29$ . However, sub-hypothesis 3b was not supported, as the relation between maternal depression symptoms and maternal monitoring was not significant,  $F(1,67) = .41, p > .05; R^2 < .01; \beta = .08$ . Since the Barron & Kenny (1986) model for testing mediation requires that all of these sub-hypothesis to be supported, the fact that this relation was not

significant means that the present study does not support the overall hypothesis of a mediated relationship. Thus, a Sobel test was not conducted.

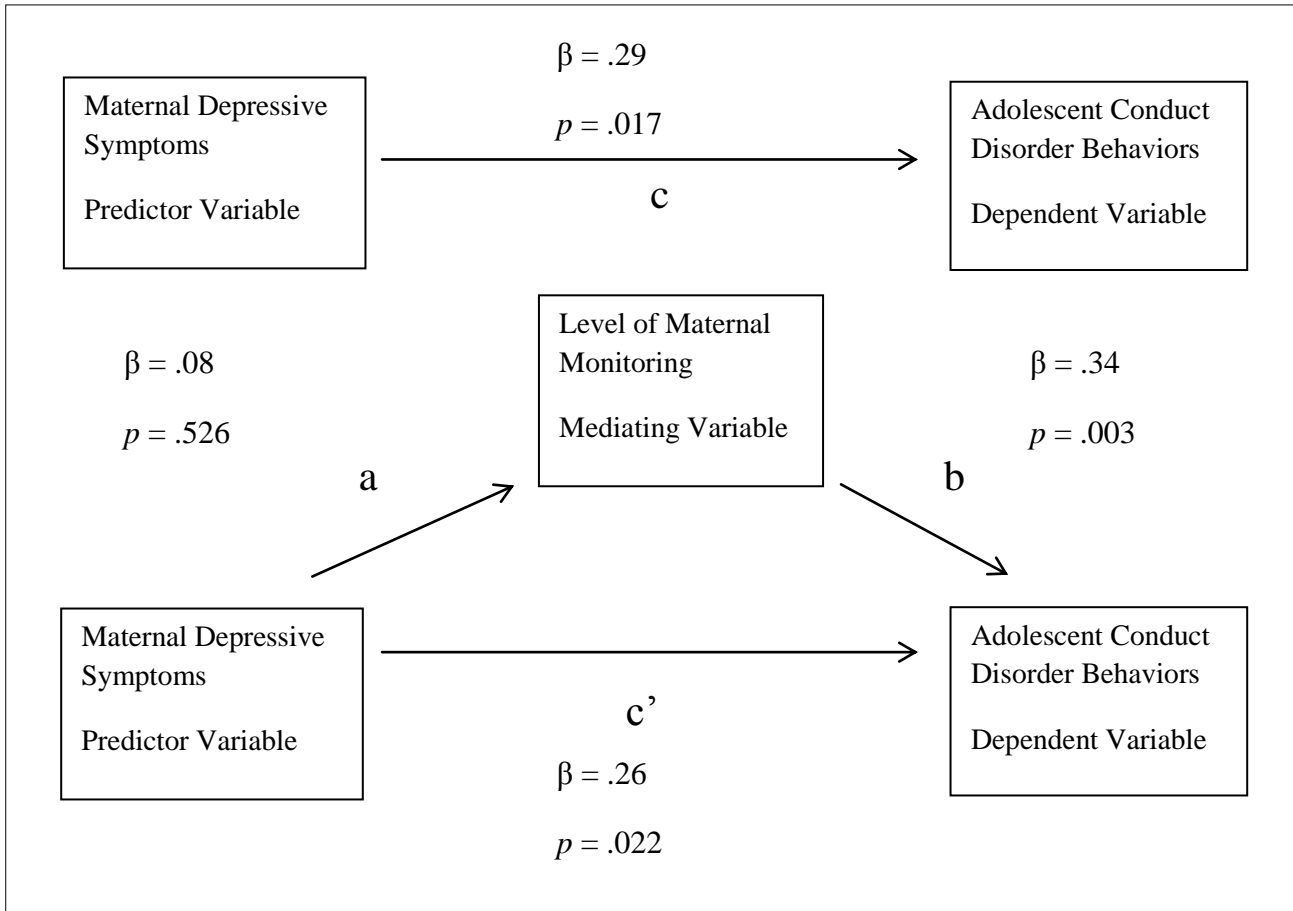


Figure 5.1 Hypothesized mediation model. This figure shows the hypothesized mediation model, with the results of the regression tests, including the standardized coefficients (Betas) and p-values for each.

Although the overarching third hypothesis was not supported, analyses were still conducted to evaluate sub-hypotheses 3c and 3d. The third regression model revealed that maternal monitoring was significantly related to adolescent conduct disorder behaviors  $F(1,67) = 9.84, p = .003; R^2 = .13; \beta = .36$ . In the fourth regression model, both maternal depression and maternal monitoring were entered at the same time as predictors. This overall model was significant,  $F(1,67) = 7.98, p = .001; R^2 = .20$ . Even though they were both entered into the

model at the same time, and thus controlled for on another, the unique contributions of maternal monitoring ( $\beta = .34$ ,  $t(66) = 3.05$ ,  $p = .003$ ) and maternal depression symptoms ( $\beta = .26$ ,  $t(66) = 2.34$ ,  $p = .022$ ) were both still significant. In other words, each accounted for a significant proportion of the variance in adolescent conduct disorder behaviors even after controlling for the other. Specifically, maternal monitoring still accounted for 11.4% of the variance in adolescent conduct disorder behaviors even after controlling for maternal depression symptoms; and maternal depression symptoms still accounted for 6.7% of the variance, even after controlling for maternal monitoring.

## Discussion

### Implications

**Demographic variables.** The first hypothesis was established as a null hypothesis, and proposed that none of the demographic variables measured would be significantly related to any of the main variables of interest. For most demographic variables, this hypothesis held true. However, and importantly, there were two demographic variables which did show a significant association with one of the variables of interest. Specifically, lower levels of household income were related to higher levels of self-reported depression symptoms; and higher adolescent ages were related to lower levels of maternal monitoring.

With regard to the focus of the current study, the association between income and depression symptoms, taken with the findings that maternal depression is related to adolescent conduct disorder behaviors, suggests that taking socioeconomic status into account may help prevention and intervention programs identify those families most in need of treatment and services.

The association between adolescent's age and levels of maternal monitoring is not surprising. It is developmentally appropriate for mothers to have less direct knowledge of the day-to-day activities of their adolescent children as their adolescent children get older and move into emerging adulthood (e.g., Snyder, Reid, & Patterson, 2003). However, as was shown in other analyses of this study, lower level of monitoring are associated with higher levels of conduct disorder behaviors. Future research should examine these findings in a way that provides a more nuanced and contextual description of how and when monitoring is helpful and when it is not effective or even detrimental, taking into account the unique circumstances of the mother and adolescent, such as the adolescent's age. This nuanced approach also relates to the sub-hypotheses described in the next section on maternal monitoring and conduct disorder behaviors.

**Maternal monitoring and adolescent conduct disorder behaviors.** As was hypothesized, maternal monitoring was positively correlated with adolescent conduct disorder behaviors, indicating that lower levels of monitoring were associated with higher levels of conduct disorder behaviors. Specifically, based on how maternal monitoring was defined for this study, mothers with less knowledge of their adolescent's activities, associations, and whereabouts were more likely to have adolescents who exhibited more conduct disorder behaviors, either by frequency or sheer amount. This finding is in line with, and adds support to, the existing body of literature which has investigated the relation between these two constructs (e.g., Connell et al., 2007; Frick et al., 1992; Frick, 1998; Loeber & Stouhamer-Loeber, 1986; Rhee & Waldman, 2002). The implication is that if mothers are able to increase their knowledge about their adolescents, it may help in decreasing their adolescents' conduct disorder behaviors. However, since the present analyses cannot infer causation, such a claim cannot be made definitively and should be researched further in future studies.

Although the association between maternal monitoring and conduct disorder behaviors has support from the previous literature, and was found to be significant in this study, the association by itself likely masks some idiosyncrasies. These potential idiosyncrasies, if uncovered, would provide a clearer picture as to whom, and in what contexts, benefits most from high levels of parental monitoring. As seen with the negative correlation between adolescent's age and monitoring, one contextual factor which may affect the effectiveness of monitoring is the age of the adolescent. The current study was designed to investigate two other contextual factors which may affect how beneficial maternal monitoring is with respect to adolescent conduct disorder behaviors. These contextual factors were the subtype which characterized the conduct disorder of the adolescent, as addressed in sub-hypothesis 2a; and how mothers went about gaining information about their adolescents (i.e., sources of information), as addressed in sub-hypothesis 2b.

***Contextual factor: subtype of conduct disorder.*** As laid out in the review of the literature, monitoring may be much less effective for adolescents in the limited-onset subtype because this subtype is characterized by a maturity gap in which adolescence strive for more independence and autonomy (Moffitt, 2003). Thus, one of the secondary aims of the current study was to provide empirical support for the notion that monitoring is less effective with some adolescents (i.e., those in the late-onset subtype) than with others, with respect to reducing conduct disorder behaviors. Unfortunately, there were not enough cases in the sample where the adolescent fell in the borderline clinical or clinical ranges for either subtype to allow for meaningful statistical comparison. The case study descriptions offer a more in-depth picture for some of the cases within the sample, but do not provide for any conclusions to be drawn.



In addition to the limitation that there were not enough cases in the sample that fell in the borderline clinical or clinical ranges, another possible limitation is that the scales used to delineate the two conduct disorder subtypes likely did not do so in an accurate manner. For reasons discussed in the review of the literature, the Rule-Breaking Behavior subscale of the CBCL/6-18 has been used in the past to identify adolescents in the late-onset subtype, whereas the Aggressive Behavior subscale has been used to identify adolescents in the early-onset subtype (Moffitt, 2003). However, in the current study there were far more adolescents who fell in the borderline clinical or clinical ranges on the Aggressive Behavior subscale ( $n=6$ ) than those for the Rule-Breaking Behavior subscale ( $n=1$ ), which is the opposite of what would be expected based on prevalence rates (Moffitt, 2003). Thus, it is not clear that the classification of cases in this study to early- or late-onset conduct disorder actually represents differences between the two subtypes. The issue may lie with the design of this study. For instance, it is possibly the result of the fact that the current study suffered from a small sample size that did not include enough cases with adolescents who would meet criteria for either subtype of conduct disorder. Conversely, it is possible that the subscales are not as effective at demarking the two subtypes as previously thought. Future research should investigate this further, and if these subscales are found to have a less than satisfactory ability to identify the two subtypes, new measures which are more effective should be developed. These investigations would probably benefit from a mixed-method design, where qualitative information could be gathered to support the classification of one subtype or the other.

***Contextual factor: sources of maternal information.*** Sub-hypothesis 2b was established as a null hypothesis, predicting that after controlling for the association between maternal monitoring on adolescent conduct disorder behaviors, the source of maternal information

variables would not account for a significant proportion of the variance in conduct disorder behaviors. Another way to frame this null hypothesis is to say that simply knowing *how* a mother goes about gathering information about her adolescent does not provide significant predictive value with regard to adolescent conduct disorder behaviors, above and beyond the predictive value of the *amount* of knowledge a mother had about her adolescent.

The results of the hierarchical regression model used to test this sub-hypothesis suggested that, in fact, the source of information variables did account for a significant proportion of the variance in conduct disorders, above and beyond what was accounted for by the maternal monitoring variable. When looking at each variable's unique contribution to the model, it was clear that child disclosure, but not parental solicitation, accounted for a significant proportion of the variance. Further, when they were entered into the same regression model, child disclosure remained a significant predictor while the proportion of the variance explained by maternal monitoring shifted from significant to non-significant. Thus, the null hypothesis (sub-hypothesis 2b) was rejected.

There are several possible conclusions that could be drawn from this finding. The first is that these results may be isolated to this study due to threats to the validity and generalizability of the current study. These threats were outlined above, but most salient to these results is the fact that although the sample size was determined based on a power analysis for mediated regression analyses, the size of the sample is smaller than recommended for assessing the individual contributions of a predictor from a multiple regression model (Tabachnick & Fidell, 2007). Additionally, as described in the Results section, parental control, one of the three subscales from the Kerr & Stattin (2000) measure of parental sources of information, was not used in this analysis because of issues with normality and internal consistency. As such, it is

possible that the results of the hierarchical regression may have looked differently had parental control been included in the model. For instance, the relative significance of child disclosure may have been lower than what was seen in this study. However, this is not likely as recent research has similarly demonstrated that child disclosure is the key component of parental knowledge (Racz & McMahon, 2011).

Thus, despite the issues related to generalizability of this study, it is still possible that the findings here are valid. If so, it would suggest that although the amount of a mother's knowledge about her adolescent is significantly associated with her adolescent's conduct disorder behaviors, this relation is specifically driven by the amount of information that the adolescent discloses to his/her mother, and not by the efforts of the mother to actively solicit information. This would likely speak to the quality of the relationship between a mother and her adolescent child, as has been suggested in the recent literature (e.g., Racz & McMahon, 2011). This is because it is likely that a relationship characterized by trust and openness (which fosters regular disclosures of information from the adolescent) is also a protective factor against conduct disorder behaviors. If true, this could become a focal point of intervention and prevention efforts related to conduct disorder behaviors, as treatment could focus specifically on fostering environments which promote child disclosure, rather than increasing parental efforts to solicit information. Although the current study does not provide enough empirical evidence to support such a claim, similar suggestions related to the quality of the relationship between a parent and his or her adolescent were made by Racz & McMahon (2011) in their review of the literature after Kerr & Stattin's 2000 publication. Still, the role that sources of information play in the relation between monitoring and conduct disorder behaviors should be examined further in future research to further tease out these possibilities. This research should specifically address the role of child

disclosure in parental monitoring and its relation with adolescent conduct disorder behaviors. For instance, one possibility that should be examined in future studies is that child disclosure may moderate the relation between parental monitoring and adolescent conduct disorder behaviors.

**Maternal depression, maternal monitoring, and conduct disorder behaviors.** The crux of this study's aims was to shed more light on how maternal depression and monitoring affect adolescent conduct disorder behaviors. As outlined in the review of the literature, there is some strong, although not 100% consistent, empirical support for the notion that lower levels of parental monitoring are related to higher levels of adolescent conduct disorder behaviors (e.g., Connell et al., 2007; Frick et al., 1992; Frick, 1998; Loeber & Stouhamer-Loeber, 1986; Rhee & Waldman, 2002). There is also some, but not a lot, of literature suggesting a link between parental depression and adolescent conduct disorder behaviors (e.g., Frick, 1998). The primary aim of this study was to bring these two pieces of information together, and to test the possibility that monitoring mediates the relationship between maternal depression and conduct disorder behaviors. The purpose behind this aim was to better inform prevention and intervention efforts as to the important treatment targets for dealing with conduct disorder.

The regression analyses for testing mediation, however, did not support the proposed mediated relationship. This was primarily due to the fact that, somewhat surprisingly, maternal depression and maternal monitoring were not significantly associated. That is to say, based on the findings of this study the level of a mother's depression symptoms does not provide significant predictive information about how much knowledge that mother has about her adolescent's activities, associations, and whereabouts. One possible explanation is that while depression may limit a mother's monitoring behaviors, it may not limit the amount of information she receives about her adolescent child (such as through child disclosure, efforts of

another caregiver or teachers, etc.). However, the current study did not address this possibility, and thus does not offer any empirical support for this possible explanation. It is also possible that maternal depression does not affect maternal monitoring in any fashion, including how a mother engages in monitoring behaviors, but again future research is needed to either support or disprove this notion.

Although the mediated relationship was not supported in the current study, both maternal depression and maternal monitoring individually accounted for a significant proportion of the variance in adolescent conduct disorder behaviors. In fact, contrary to the study's hypotheses, these two predictors appeared to account for completely separate and unique proportions of the variance. This is seen in the fact that both predictors maintained significance even in the last regression model where they were entered at the same time (i.e., controlling for each other). Additionally, the Beta coefficients and semipartial correlations (which denote how much of the variance in conduct disorder behaviors is uniquely accounted for by each predictor) stayed almost the same from the simple regression models where each predictor was assessed individually to the multiple regression model where both predictors were entered at the same time. This suggests that while it was hypothesized that monitoring was one mechanism for how maternal depression affects adolescent conduct disorder, maternal monitoring and depression in fact represent two entirely separate constructs that are independently and uniquely associated with adolescent conduct disorder behaviors. For instance, the quality of the mother-adolescent relationship which either promotes or discourages child disclosure may represent one significant association to adolescent conduct disorder behaviors, an association that may not be swayed one way or the other by the level of maternal depression symptoms. Separately, it may be that maternal depression may represent an entirely unique association with adolescent conduct

disorder behaviors, while the mechanisms are not yet fully understood. If it is true that maternal depression symptoms and maternal monitoring are independently and uniquely associated with adolescent conduct disorder behaviors, this would indicate that prevention and intervention programs aimed at reducing conduct disorder behaviors should address both mothers' behaviors (e.g., monitoring) and psychological well-being (e.g., depression). Based on the findings of this study, such a program would likely be effective since these two targets appear to work independently (i.e., it would be hard to affect one by addressing the other), and taken together they account for 20% of the variance in adolescent conduct disorder behaviors.

### **Limitations**

In the discussion of study implications, some possible limitations that were specific to certain implications were already addressed. This section of the discussion chapter will focus on general limitations that affect the study as a whole, which are important to keep in mind so that all results and discussed implications can be taken in the proper context. It should also be noted that instead of designating a separate section of this chapter to address avenues for further research suggested by the findings of this study; implications for future research were already addressed in the discussions of each set of results and implications.

One of the main limitations to the present study involves the threats to the study's generalizability. As originally designed the population that this study sampled from was confined to families of four churches in a southeastern city in the USA. Clearly, a sample from this population may not be representative of the general population as a whole. For instance, mothers and adolescents involved with a church organization may have certain characteristics which do not follow the same normal distribution as they do in the general population. Included in these characteristics may be variables (such as parental warmth or support) which significantly affect

adolescent conduct disorder behaviors. Further, due to challenges with recruitment from this narrowly-defined population, the study's population definition was modified after data collection had already begun, so that it was no longer restricted to church members or a specific geography. While in theory this change would increase the likelihood that study results would be generalizable to the general population, a few factors still challenged the study's external validity. First, the new recruitment procedures called for the researchers to ask personal and professional contacts to pass along electronic recruitment information. Thus, the current study cannot be characterized as using random sampling, since not all individuals from all geographic locations or walks of life had equal opportunity to be exposed to the recruitment materials. Secondly, this change was made after 20 participants from the church had already filled out the online survey. Thus, these 20 participants from the originally sampled population were combined with 60 new participants sampled from the newly-defined population to create a dataset of 80 participants, which may have affected external validity.

Whether due to an originally narrowly-defined study population, the non-random sampling that occurred after the population definition was modified, the fact that the sample combined participants recruited from both the original and the modified population, or another unforeseen reason, the sample used for this study showed characteristics that are not representative of the general population. For instance, 50.7% of the participants reported attending at least some graduate school, with 39.1% of the participants reporting that they had finished graduate school. Additionally, 51.4% of participants reported an approximate annual household income of \$100,000 or greater, with 19.1% reporting an annual household income of \$200,000 or greater. Further, 79.7% reported living in a suburban neighborhood, rather than an urban or rural community. Taken together, it is clear that the sample of the current study cannot

be characterized as representative of the general population. As such, future research studies should attempt to replicate the findings of this study with samples that have greater generalizability.

While these threats to generalizability are an important limitation of the current study, another key limitation is that there were several areas where important information was not gathered. For instance, the current study only took into account maternal factors, meaning whether or not there was another caregiver in the household was not assessed, and information about this other caregiver (if present) was not captured. Thus, the current study did not capture information related to the father or other caregiver's depression symptoms or monitoring levels. Nor did the current study tap into the nature of the relationship between the caregivers (again, if more than one was present). This is an important limitation because relational characteristics such as how much support a depressed caregiver receives from the other caregiver, or how much discord there is between caregivers, likely play a role in how maternal depression affects adolescent development. Future studies should seek to include data regarding all of the adolescent's caregivers, and the caregiver-caregiver relationship, to determine what effect these may have on the relations between maternal depression, maternal monitoring, and adolescent conduct disorder behaviors. Future research that also measures the relationship quality between all caregivers and the adolescent child would likely contribute significantly to the understanding of how the variables measured in the current study interact within a familial unit.

Another piece of information that was not assessed, but likely would have been helpful in interpreting the results of the current study, is information related to the adolescents' development and functioning. An adolescent suffering from a developmental delay would likely affect a mother's responses given to the CBCL subscales and the Monitoring measure.



Unfortunately, there were no inclusion or exclusion criteria which dealt with functioning issues such as developmental delays, since it would be hard to enforce such criteria without more direct contact between researchers and participants. Thus, it is not known if such issues affected the responses given in this study, although in the optional comments box at the end of the survey two participants made references to “communication delays” and “special needs” in explaining why they thought the survey questions were not completely applicable to their adolescents (for a full listing of participant comments, see Appendix H).

A review of the comments left by participants suggested that many of the participants who chose to leave comments felt as though some of the questions and/or response options did not quite fit them and/or their adolescent. While not necessarily a limitation of the current study, since this study utilized commonly-used measures with well-established psychometric properties, it does suggest that a mixed-method approach that includes qualitative interviews may provide for a richer and more accurate picture of the experiences of the mothers and their adolescents.

Other limitations of the current study include the fact that, for the sake of keeping the online survey brief so that participants were more likely to complete it, only the Rule-Breaking Behaviors and Aggressive Behaviors subscales of the CBCL were administered. However, if the full CBCL/6-18 had been administered, a Conduct Disorder Scale score would have been produced. It is possible that this score would have been a more accurate measure of conduct disorder behaviors than simply adding together the scores on the Rule-Breaking Behaviors and Aggressive Behaviors subscales. Additionally, a possible limitation of the current study is that while the aim was to advance the current knowledge so as to suggest improvements to existing interventions for conduct disorder, the study only measured level of conduct disorder behaviors, without assessing whether or not a diagnosis of conduct disorder was warranted. This was due to

the fact that it was unlikely that the sample from a non-referred population would yield enough cases where the adolescent met criteria for a conduct disorder diagnosis. However, although it is not likely, it is possible that the findings of this study as related to the associations of maternal depression and maternal monitoring with adolescent conduct disorder behaviors (whether in the normative range or beyond it) do not hold true when only those who meet criteria for conduct disorder diagnosis are included in the analyses. One other limitation of note is that while the sample-size of 69 was shown to be sufficient to test a mediation relationship through regression analyses, it is below the recommended sample size for evaluating the unique contributions of multiple predictors in a multiple regression model (Tabachnick & Fidell, 2007).

## **Conclusions**

In its hypotheses, the current study proposed that intervention programs which aim to decrease adolescent conduct disorder behaviors by improving maternal monitoring via education alone were missing the mark by not taking into account maternal psychological-well-being (i.e., depression). In other words, it was proposed that some mothers may exhibit lower monitoring of their children due to psychological issues such as depression, and thus targeting the mothers' depression may also help improving monitoring, which in turn would reduce adolescent conduct disorder behaviors.

The results of this study, however, do not support such a claim. Instead, the results suggest that not only are maternal depression and maternal monitoring not significantly associated, but that they are each independently and uniquely related to adolescent conduct disorder behaviors. Thus, addressing only one maternal factor (depression or monitoring) will not affect the other factor. Importantly, though, the results of this study suggest that since both maternal depression and maternal monitoring were found to be significantly associated with

adolescent conduct disorder behaviors, and since both account for very unique sources of variance in conduct disorder behaviors, interventions which only target parental monitoring, and not parental psychological well-being are missing an important component for effective treatment. Put another way, this study suggests that interventions which include assessments and treatment for maternal depression would have higher levels of efficacy in reducing conduct disorder behaviors, relative to existing interventions for conduct disorder which do not address maternal depression.

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## **Appendix A Electronic Consent Form**

### **RESEARCH SUBJECT INFORMATION AND CONSENT FORM**

**TITLE:** Maternal Monitoring and Maternal Psychological Well-Being: Important components in treating conduct disorder

**VCU IRB NO.:** HM14635

You are encouraged to review this consent form and discuss with family or friends before making your decision.

#### **PURPOSE OF THE STUDY**

The purpose of this research study is to examine mothers' depression symptoms, mothers' parenting behaviors, and adolescents' behaviors. You are being asked to participate in this study because you are the mother of an adolescent (aged 10-18).

#### **DESCRIPTION OF THE STUDY AND YOUR INVOLVEMENT**

If you decide to be in this research study, you will be asked to indicate your consent by clicking to continue after you have read this information and understand what will happen to you.

In this study you will be asked to answer some demographic questions in addition to three brief questionnaires, all online via a secure website. One questionnaire will ask you about your experience, if any, with symptoms of depression. This questionnaire includes 9 questions. Another questionnaire will ask you about your adolescent's behaviors, and includes 35 questions. The last questionnaire will ask you about some of your interactions with your adolescent. This last questionnaire will include 24 questions. All questionnaires, except for some demographics questions, will be multiple choice.

Your responses will be kept confidential. You will not be asked to provide any identifying information, and your email or IP address will not be tracked. Thus, your responses to these questionnaires will not be linked with any information which could identify you.

#### **RISKS AND DISCOMFORTS**

Sometimes thinking about certain subjects can cause people to become upset. Some of the questions in this study will ask you about things you or your family may have experienced, and some may be unpleasant. You do not have answer any questions you do not want to and you may choose to discontinue answering these questionnaires at any time. If you become upset, please consult the referral list for psychological services, which is provided after the completion of the surveys, so that you can get help in dealing with these issues. Additionally, if you indicate that you have thoughts of hurting yourself, you must get in contact with someone from that referral list.

#### **BENEFITS TO YOU AND OTHERS**

You may not get any direct benefit from this study, but, the information we learn from people in this study may help us design better programs for parents and adolescents.

## **COSTS**

*There are no costs for participating in this study other than the time you will spend answering questionnaires.*

## **ALTERNATIVES**

*You can choose to not participate in this study, as an alternative to participation.*

## **CONFIDENTIALITY**

Information collected about you will consist of the three questionnaires described in the section describing the study and your involvement. Data is being collected only for research purposes. You will not be asked to include your name or any other identifying information with your questionnaires. Your questionnaire responses (which will only be identified by ID number) will be kept in a password-protected web-based program and password-protected computer file. Access to all data will be limited to study personnel. A data and safety monitoring plan is established.

We will not tell anyone the answers you give us; however, information from the study may be looked at or copied for research or legal purposes by Virginia Commonwealth University.

What we find from this study may be presented at meetings or published in papers, but your name or other identifying information will never be used in these presentations or papers.

*If you inform us that you have thoughts about hurting yourself, we are required by law to report that information to the appropriate authorities. In these cases, we ask you to email the researchers at the provided email address to initiate this contact.*

## **VOLUNTARY PARTICIPATION AND WITHDRAWAL**

You do not have to participate in this study. If you choose to participate, you may stop at any time without any penalty. You may also choose not to answer particular questions that are asked in the study.

Your participation in this study may be stopped at any time by the study staff without your consent. The reasons might include:

- the study staff thinks it necessary for your health or safety;
- you have not followed study instructions;
- administrative reasons require your withdrawal.

## **QUESTIONS**

*If you have any questions, complaints, or concerns about your participation in this research, contact:*

**Dr. Micah McCreary, M.Div., PhD, LCP**  
*Associate Professor of Counseling Psychology at VCU*

**808 W Franklin St, room 402**  
**(804) 828-1889**  
**mccreary@vcu.edu**

*The researcher/study staff named above is the best person(s) to call for questions about your participation in this study.*

*If you have any general questions about your rights as a participant in this or any other research, you may contact:*

*Office of Research  
Virginia Commonwealth University  
800 East Leigh Street, Suite 113  
P.O. Box 980568  
Richmond, VA 23298  
Telephone: (804) 827-2157*

Contact this number for general questions, concerns or complaints about research. You may also call this number if you cannot reach the research team or if you wish to talk with someone else. General information about participation in research studies can also be found at <http://www.research.vcu.edu/irb/volunteers.htm>.

## ***REFERRALS***

*Once you have completed the survey, the last page you will see will provide referral information for psychological and mental health services, should you be interested.*

## ***CONSENT***

*I have been given the chance to read this consent form. I understand the information about this study. Questions that I wanted to ask about the study have been answered. My clicking the 'continue' button below indicates that I am willing to participate in this study.*

1. After reading through the information on this consent form, please click "Continue" to indicate your consent to participate in this study. If you do not wish to participate, please select "No Thanks"

## Appendix B Demographic Survey Items

1. What is your age
2. What is your gender?
  - a. Female
  - b. Male
  - c. Transgendered
  - d. Other (please specify)
3. Which race/ethnicity best describes you (Please choose only one.)
  - a. American Indian or Alaskan Native
  - b. Asian / Pacific Islander
  - c. Black or African American
  - d. Hispanic American
  - e. White / Caucasian
  - f. Other (please specify)
4. What is the highest level of education you have completed?
  - a. Did not graduate high school
  - b. Graduated from high school/GED
  - c. Some college, but no degree
  - d. Associates Degree
  - e. Bachelors Degree
  - f. Some graduate school
  - g. Completed graduate school
5. What is your approximate average household income?
  - a. \$0-\$24,999
  - b. \$25,000-\$49,999
  - c. \$50,000-\$74,999
  - d. \$75,000-\$99,999
  - e. \$100,000-\$124,999
  - f. \$125,000-\$149,999
  - g. \$150,000-\$174,999
  - h. \$175,000-\$199,999
  - i. \$200,000 and up
6. Which best describes the neighborhood where you live?
  - a. Urban
  - b. Suburban
  - c. Rural
  - d. Other (please specify)
7. What city do you currently live in?
8. How many people currently live in your household?
9. How many children age 18 or younger live in your household?

Several questions on this survey will ask you about your adolescent child. Even if you have more than one adolescent child living at home with you, it is very important that you choose **ONLY ONE** whom you will answer **ALL** of these questions about. In other words, when answering questions about your child, please be consistent in always thinking of the same child, even if you have more than one adolescent in your household.

10. How old is your adolescent child?
11. What is the gender of this child?
  - a. Female
  - b. Male
  - c. Transgendered
  - d. Other (please specify)
12. Please list this child's siblings by age and gender, but do not include any other identifying information. (Example: sister, age 16; brother age 8; etc. but **NO NAMES**)
13. Are you this child's birth parent?
  - a. Yes
  - b. No
14. How many of this child's birth-parents, including yourself, live in the household?

## Appendix C PHQ-9 Items

Over the LAST 2 WEEKS, how often have you been bothered by any of the following problems?

1. Little interest or pleasure in doing things
  - a. Not at all
  - b. Several days
  - c. More than half the days
  - d. Nearly every day
2. Feeling down, depressed, or hopeless
  - a. Not at all
  - b. Several days
  - c. More than half the days
  - d. Nearly every day
3. Trouble falling or staying asleep, or too sleeping too much
  - a. Not at all
  - b. Several days
  - c. More than half the days
  - d. Nearly every day
4. Feeling tired or having little energy
  - a. Not at all
  - b. Several days
  - c. More than half the days
  - d. Nearly every day
5. Poor appetite or overeating
  - a. Not at all
  - b. Several days
  - c. More than half the days
  - d. Nearly every day
6. Feeling bad about yourself – or that you are a failure or have let yourself or your family down
  - a. Not at all
  - b. Several days
  - c. More than half the days
  - d. Nearly every day
7. Trouble concentrating on things, such as reading the newspaper or watching television
  - a. Not at all
  - b. Several days
  - c. More than half the days
  - d. Nearly every day
8. Moving or speaking so slowly that other people could have noticed? Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual.
  - a. Not at all
  - b. Several days

- c. More than half the days
  - d. Nearly every day
9. Thoughts that you would be better off dead or hurting yourself in some way
- a. Not at all
  - b. Several days
  - c. More than half the days
  - d. Nearly every day
10. If you checked off ANY problems, how DIFFICULT have these problems made it for you to do your work, take care of things at home, or get along with other people?
- a. Not difficult at all
  - b. Somewhat difficult
  - c. Very difficult
  - d. Extremely difficult

**Appendix D**  
**Maternal Monitoring Measure, Adapted from Kerr & Stattin (2000)**

REMINDER: Please consistently answer questions about the same adolescent child throughout the survey, even if you have more than one adolescent child at home.

1. Do you know what your child does during his or her free time?
  - a. No, never
  - b. Rarely
  - c. Sometimes
  - d. Most of the time
  - e. Yes, always
2. Do you know who your child has as friends during his or her free time?
  - a. No, never
  - b. Rarely
  - c. Sometimes
  - d. Most of the time
  - e. Yes, always
3. Do you usually know what type of homework your child has?
  - a. No, never
  - b. Rarely
  - c. Sometimes
  - d. Most of the time
  - e. Yes, always
4. Do you know what your child spends his or her money on?
  - a. No, never
  - b. Rarely
  - c. Sometimes
  - d. Most of the time
  - e. Yes, always
5. Do you usually know when your child has an exam or paper due at school?
  - a. No, never
  - b. Rarely
  - c. Sometimes
  - d. Most of the time
  - e. Yes, always
6. Do you know how your child does in different subjects at school?
  - a. No, never
  - b. Rarely
  - c. Sometimes
  - d. Most of the time
  - e. Yes, always
7. Do you know where your child goes when he or she is out with friends at night?
  - a. No, never
  - b. Rarely
  - c. Sometimes



- d. Most of the time
  - e. Yes, always
8. Do you normally know where your child goes and what he or she does after school?
- a. No, never
  - b. Rarely
  - c. Sometimes
  - d. Most of the time
  - e. Yes, always
9. In the last month, have you ever had no idea of where your child was at night?
- a. No, never
  - b. Rarely
  - c. Sometimes
  - d. Most of the time
  - e. Yes, always

**Appendix E**  
**Maternal Sources of Information Subscales, Adapted from Kerr & Stattin (2000)**

**Child Disclosure Items**

1. Does your child talk with you about how he or she is doing in the different subjects in school? (RC)
  - a. No, never
  - b. Rarely
  - c. Sometimes
  - d. Most of the time
  - e. Yes, always
2. Does your child usually tell you how school was when he or she gets home (how he or she did on different exams, his or her relationships with teachers, etc.)? (RC)
  - a. No, never
  - b. Rarely
  - c. Sometimes
  - d. Most of the time
  - e. Yes, always
3. Does your child keep a lot of secrets from you about what he or she does during his or her free time?
  - a. No, never
  - b. Rarely
  - c. Sometimes
  - d. Most of the time
  - e. Yes, always
4. Does your child hide a lot from you about what he or she does during nights and weekends?
  - a. No, never
  - b. Rarely
  - c. Sometimes
  - d. Most of the time
  - e. Yes, always
5. If your child is out at night, when he or she gets home, does he or she tell you what he or she did that evening? (RC)
  - a. No, never
  - b. Rarely
  - c. Sometimes
  - d. Most of the time
  - e. Yes, always

**Parental Solicitation Items**

6. In the last month, have you talked with the mother of your child's friends? (RC)
  - a. No, never
  - b. Rarely
  - c. Sometimes

- d. Most of the time
  - e. Yes, always
7. How often do you talk with your child's friends when they come to your home (ask what they do or what they think and feel about different things)? (RC)
- a. No, never
  - b. Rarely
  - c. Sometimes
  - d. Most of the time
  - e. Yes, always
8. During the past month, how often have you started a conversation with your child about his or her free time? (RC)
- a. No, never
  - b. Rarely
  - c. Sometimes
  - d. Most of the time
  - e. Yes, always
9. How often do you initiate a conversation about things that happened during a normal day at school? (RC)
- a. No, never
  - b. Rarely
  - c. Sometimes
  - d. Most of the time
  - e. Yes, always
10. Do you usually ask your child to talk about things that happened during his or her free time (whom he or she met when he or she was out, free time activities, etc.)? (RC)
- a. No, never
  - b. Rarely
  - c. Sometimes
  - d. Most of the time
  - e. Yes, always

### Parental Control Items

11. Does your child need to have your permission to stay out late on a weekday evening? (RC)
- a. No, never
  - b. Rarely
  - c. Sometimes
  - d. Most of the time
  - e. Yes, always
12. Does your child need to ask you before he or she can decide with your friends what he or she will do on a Saturday evening? (RC)
- a. No, never
  - b. Rarely
  - c. Sometimes
  - d. Most of the time
  - e. Yes, always

13. If your child has been out very late one night, do you require that he or she explain what he or she did and whom he or she was with? (RC)
- No, never
  - Rarely
  - Sometimes
  - Most of the time
  - Yes, always
14. Do you always require that your child tells you where he or she is at night, who he or she is with, and what they do together? (RC)
- No, never
  - Rarely
  - Sometimes
  - Most of the time
  - Yes, always
15. Before your child goes out on a Saturday night, do you require your child to tell you where he or she is going and with whom? (RC)
- No, never
  - Rarely
  - Sometimes
  - Most of the time
  - Yes, always

**\*RC = item was reverse coded**

## Appendix F Rule-Breaking Behavior Subscale of the CBCL/6-18

REMINDER: Please consistently answer questions about the same adolescent child throughout the survey, even if you have more than one adolescent child at home.

Below is a list of items that describe children and youth. For each item that describes your child NOW OR WITHIN THE PAST 6 MONTHS, please indicate if the item is very true or often true of your child; if the item is somewhat or sometimes true of your child; or if the item is not true of your child. Please answer all items as well as you can, even if some do not seem to apply to your child.

1. Drinks alcohol without parents' approval
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
2. Doesn't seem to feel guilty after misbehaving
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
3. Breaks rules at home, school, or elsewhere
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
4. Hangs around with others who get in trouble
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
5. Lying or cheating
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
6. Prefers being with older kids
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
7. Runs away from home
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
8. Sets fires
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
9. Sexual problems

- a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
10. Steals at home
- a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
11. Steals outside of the home
- a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
12. Swearing or obscene language
- a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
13. Thinks about sex too much
- a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
14. Smokes, chews, or sniffs tobacco
- a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
15. Truancy, skips school
- a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
16. Uses drugs for nonmedical purposes (DON'T include alcohol or tobacco)
- a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
17. Vandalism
- a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true

## Appendix G Aggressive Behavior Subscale of the CBCL/6-18

REMINDER: Please consistently answer questions about the same adolescent child throughout the survey, even if you have more than one adolescent child at home.

Below is a list of items that describe children and youth. For each item that describes your child NOW OR WITHIN THE PAST 6 MONTHS, please indicate if the item is very true or often true of your child; if the item is somewhat or sometimes true of your child; or if the item is not true of your child. Please answer all items as well as you can, even if some do not seem to apply to your child.

1. Argues a lot
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
2. Cruelty, bullying, or meanness to others
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
3. Demands a lot of attention
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
4. Destroys his/her own things
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
5. Destroys things belonging to his/her family or others
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
6. Disobedient at home
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
7. Disobedient at school
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
8. Gets in many fights
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
9. Physically attacks people
  - a. Not true

- b. Somewhat or sometimes true
  - c. Very true or often true
- 10. Screams a lot
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
- 11. Stubborn, sullen, or irritable
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
- 12. Sudden changes in mood or feelings
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
- 13. Sulks a lot
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
- 14. Suspicious
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
- 15. Teases a lot
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
- 16. Temper tantrums or hot temper
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
- 17. Threatens people
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true
- 18. Unusually loud
  - a. Not true
  - b. Somewhat or sometimes true
  - c. Very true or often true



## Appendix H Participant Comments

<i>Participant</i>	<i>Comment</i>
Participant 1	With my child only being 10, some of the questions needed a ""not applicable"" answer on them in my opinion.
Participant 10	My child is only 13; therefore, he does not go anywhere unsupervised by an adult.
Participant #11	you should have rarely as an answer
Participant #14	My responses are based on an individual with communication delays. Some questions were skipped to ensure an accurate results of the data.
Participant #35	Some of the questions asked are a bit more difficult to answer because my boys both tease and bug each other on a regular basis, but I think the information I provided is an accurate depiction. I am a stay-at-home hovering mom so I am always asking lots of questions and am good friends with my kids friends parents. We communicate on a regular basis. I just worry about when they go to college and I don't know who they are going to meet up with. Hopefully kids like those they have grown up with. I am hoping that we have given our kids a good foundation in which to grow and make good choices. Hope this helps!
Participant #52	I did not respond to the questions regarding issues my stepson has at school because beginning with this school year, we have him attending online public school at home.
Participant #54	My son is 11 so does not go out alone, at night, or at weekends - hopefully that doesn't skew my answers too much
Participant #56	You might check your response options starting around 41. I found it difficult to select one, but forced myself to. A few were awkwardly worded, and with no ""NA,"" I think you are going to get some skewed data. Best of luck on your research!
Participant #58	I think the appropriate term is ""transgender"" rather than ""transgendered
Participant #59	My results may be slightly skewed as this child is adopted and has special needs. Great kid but has some challenges. Still, all in all, a typical teenager.
Participant #65	Good luck!
Participant #68	Some questions didn't apply. To young to go out by herself.
Participant #69	There are some behaviors listed that are very normal for teenage children. Teenagers are sullen and moody. This does not mean that they are depressed. Also, where in your survey is there a section about how to overcome the depression? I have suffered from depression as a young mother. God is the answer for depression.

## **Appendix I Vita**

Benjamin Victor Rosen was born on March 24<sup>th</sup>, 1983 in Chicago, Illinois. He is an American Citizen. He graduated in May of 2001 from James Madison Memorial High School in Madison, Wisconsin. He received a Bachelor of Arts degree from the University of Wisconsin-Madison in May of 2006, double majoring in Psychology and Sociology. He subsequently worked from 2006 to 2009 as a group leader, and later as a supervisor, at New Dominion Boys School, a residential wilderness therapy program. He also worked from 2009 to 2010 at Family Preservation Services as an intensive in-home counselor for children and adolescents at risk for removal from their homes.