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## **Longitudinal Prediction of Delinquent Behavior in Early Adolescence**

Kathleen Watson MacDonell

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Longitudinal Prediction of Delinquent Behavior in Early Adolescence

by

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## Abstract

Childhood behavioral problems have consistently been reported as an antecedent for later problem behavior, including delinquency in adolescence and into adulthood. Parenting behaviors are an important influence on the potentially negative behavioral trajectory from childhood behavior problems to delinquency in early adolescence. The current study sought to provide further understanding of the relationship between teacher-reported third grade childhood behavior problems and two outcomes: ninth grade teacher-reported and ninth grade self-reported delinquency. Additionally, the moderating impact of parental monitoring and parental school involvement, assessed in fifth grade, was explored. Using a longitudinal sample of 556 participants, hypotheses were assessed separately for males ( $n = 280$ ) and females ( $n = 276$ ) to allow for the exploration of sex differences in relationships between the constructs. Hierarchical multiple regression analyses were employed. Childhood behavior problems were found to significantly predict both teacher-reported and self-reported delinquency in ninth grade. Significant moderation of these predictive relationships was not found for parental monitoring or parental school involvement. Findings support the importance of these parenting factors as to their impact on the development of delinquency males and females.

*Keywords:* childhood behavior problems, delinquency, parental monitoring, parental school involvement, sex differences.

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## Chapter 1. Introduction

Childhood behavior problems are consistently reported as an antecedent for later problem behavior, including adolescent delinquency (Broidy et al., 2003; Hay, Meldrum, Widdowson, & Piquero, 2017; Loeber & Hay, 1997). However, not all children who exhibit behavioral difficulties go on to engage in delinquent or criminal behaviors in adolescence or adulthood (Hay et al., 2017; Loeber & Hay, 1997). Prediction of early adolescent delinquency, based on early and middle childhood factors, allows us to ascertain which factors in a child's ecological system contribute to negative developmental trajectories. Specifically, the identification of parenting behaviors that moderate the development of early adolescent delinquency is an important step toward its reduction or prevention.

When early childhood behavior problems are not addressed, most effectively through interventions aimed at parenting behaviors, a negative developmental trajectory is more likely (Hoeve et al. 2009; Sandler, Schoenfelder, Wolchik, & MacKinnon, 2011). The implementation of parental behavioral controls and the use of both positive parenting strategies and forms of discipline are each effective in reducing childhood behavior problems, thereby limiting the development of adverse outcomes (Breiner, Ford, & Gadsden, 2016; Sandler et al., 2011). Monitoring is a parenting strategy that is strongly linked to the prevention of, or reduction in, behavioral issues (Hoeve et al., 2009; Pinquart, 2017). However, most of the monitoring literature focuses on mid to late

adolescence, as opposed to the middle school years; a period during which factors contributing to the development of early adolescent delinquency are important to assess.

The current study focused on the longitudinal prediction of early adolescent delinquency from childhood behavioral problems and whether certain microsystem factors change the strength of this relationship. Specifically, it explored whether parental monitoring and parental school involvement in middle school moderate the relationship between childhood behavioral problems and delinquency in early adolescence.

This study is unique as it fills multiple gaps in the existing literature. The monitoring literature emphasizes the influence of parental monitoring across adolescence, as opposed to the important developmental period of middle childhood that is the focus of the current study. Parental school involvement, a construct not as often explored regarding its impact on behavioral outcomes, was further assessed as to its impact. This study is also unique in examining the how the interaction between childhood behavior issues, parental monitoring, and parental school involvement during middle childhood predicts early adolescent delinquency. Lastly, each model was assessed separately for males and females to allow for the exploration of likely distinct relationships, as female delinquency has received less attention in the research literature. Specifically, this study addresses gaps in the literature regarding female delinquency by using multiple data sources and longitudinal data (Fontaine, Carbonneau, Vitaro, Barker, & Tremblay, 2009). Literature regarding the relationships between each of the focal factors and youth behavior problems and delinquency are reviewed below.



## *1.1 Adolescent Delinquency*

Adolescent delinquency includes behaviors considered to be antisocial, aggressive, and perhaps criminal (e.g. stealing, damaging property, physical fighting, truancy, arson) engaged in prior to eighteen years of age (Murray & Farrington, 2010). Perpetration of such behaviors can, if caught, lead to early involvement with law enforcement and perhaps the criminal justice system. Delinquent behaviors are usually classified into two main categories: violent and non-violent. Violent delinquent behaviors entail aggressive offenses such as physical attacks with or without a weapon, murder, and sexual assault. Non-violent delinquent behaviors are considered non-aggressive and include shoplifting, property damage, or trafficking substances (Hoeve et al., 2009). Youth that perpetrate violent behaviors are more likely to exhibit early-onset delinquency and to be experiencing multiple risk factors for externalizing problems (i.e. poor family functioning, early behavioral problems, exposure to community or domestic violence, violence victimization; Hoeve et al., 2009; Moffitt & Caspi, 2001).

### *1.1.1 Childhood behavior problems and adolescent delinquency.*

Decades of longitudinal studies have consistently linked factors within a child's ecological system, most specifically, familial, environmental, and child factors, to the emergence and maintenance of delinquent behaviors in adolescence and into adulthood (Jolliffe, Farrington, Piquero, Loeber, & Hill, 2017; Murray & Farrington, 2010; Loeber et al., 1993; Nagin & Tremblay, 1999). Prenatal and early childhood exposure to environmental teratogens (Braun et al., 2008; Rauh & Margolis, 2016), exposure to violence (Finkelhor et al., 2015; Wilson et al., 2009), growing up in impoverished communities (McLoyd, 1998; Li, Nussbaum, & Richards, 2007), experiencing abuse and

neglect (Landsford, Dodge, Pettit, Bates, Crozier, & Kaplow, 2002; MacDonell, 2012) and early substance use (Prinz & Kerns, 2003) have each been linked to subsequent exhibition of behavior problems, some of which are criminogenic.

One of the childhood factors most frequently associated with later delinquency is early behavioral problems (Broidy et al., 2003; Hay et al., 2017; Loeber & Hay, 1997). Considering a developmental perspective this relationship makes sense. Behavior problems and adolescent delinquency are similar constructs that vary regarding severity and age of expression. Behavior problems specifically usually have an early-onset; examples include disruptive and non-compliant behaviors, as well as unprovoked aggression and impulsivity (Ehrensaft, 2005; Hinshaw, 1992). In some children, chronic and severe manifestations of these behaviors may result in diagnoses of oppositional defiant disorder and conduct disorder (Ehrensaft, 2005). When an individual begins to exhibit early problem behaviors, and intervention does not occur, such behaviors are likely to continue and develop into a more consistent pattern.

Several studies have explored the relationship between childhood behavior problems and adolescent delinquency and have posited specific developmental trajectories (Broidy et al., 2003; Ehrensaft, 2005; Hinshaw, 1992; Moffitt & Caspi, 2001; Nagin & Tremblay, 1999; Timmermans, van Lier, & Koot, 2009; White, Moffitt, Earls, Robins, & Silva, 1990; Farrington, Ttofi, & Piquero, 2016; Fontaine, Brendgen, Vitaro, & Tremblay, 2016; Jolliffe, Farrington, Loeber, & Pardini, 2016). Distinct groups include 'no problem', 'chronic problem', 'high-level, desister', and 'moderate-level, desister' trajectories (Broidy et al., 2003). Those in the 'high-level, desister' group tend to emulate the chronic problem group until adolescence begins (12-13 years old), after

which a steep decline is seen in these behaviors. The ‘moderate-level, desister’ group only exhibits moderate levels of problem behaviors before a decline in early adolescence. All three of the trajectories in which delinquency was reported included indications of early-onset childhood behavior problems (Broidy et al., 2003).

Loeber and colleagues (Loeber et al., 1993; Loeber & Hay, 1997) posited a framework of three trajectories differentiated by the type and seriousness of problem behaviors. An overt pathway begins with minor aggression (e.g. pestering, bullying others), progresses into physical fighting, and ends in a final stage characterized by more severe violence. The covert pathway begins with minor covert or hidden behavioral issues (e.g. shoplifting, lying), progresses to property damage (e.g. vandalism, arson), and culminates in moderate to serious forms of delinquency such as fraud, burglary, or serious theft (Loeber & Hay, 1997). A third pathway is characterized by persistent conflict with authority, beginning with stubbornness, acts of defiance and open disobedience and eventually progresses into more serious acts of defiance (e.g. truancy, running away from home, defying curfews; Loeber & Hays, 1997). Again, a common denominator of each pathway is early indicators of problem behaviors that progressively intensify without intervention.

### *1.1.2 Sex Differences in Childhood Behavior Problems and Adolescent Delinquency*

Most literature exploring delinquent behavior has focused on predominantly male samples; however, more recently published reports have explored the incidence and development of these behaviors in females as well (Gorman-Smith & Loeber, 2005; Hirachi et al., 2006; Farrington et al., 2016; Jolliffe et al., 2016; Nagin & Tremblay, 1999; Loeber, Farrington, Stouthamer-Loeber, Moffitt, & Caspi, 1998). Overall,

explorations of developmental trajectories report that male and female delinquent pathways have some similarities; however, based on risk and protective factors, unique behavioral trajectories are typically evident (Bright, Sacco, Kolivoski, Stapleton, Jun, & Morris-Compton, 2017; Gorman-Smith & Loeber, 2005; Fagen, Van Horn, Hawkins, & Arthur, 2007; Whitney, Renner & Herrenkohl, 2010). Although male children are reported to exhibit more behavior problems compared to females of a similar age, early development of behavior problems in both sexes has been linked to a greater risk for following a chronic negative behavior trajectory (Patterson, DeBaryshe, & Ramsey, 1990).

Differences in type of behavior problems and problem intensity between males and females persist into adolescence, with higher rates of delinquency consistently reported for, and self-reported by, male youth (Ehrensaft, 2005; Lahey et al., 2000; Pepler, Jiang, Craig, & Connolly, 2010). Males also report greater use of violence (Broidy et al., 2003; Fagen et al., 2007; Pepler et al., 2010; Whitney et al., 2010). Females who report engagement in delinquent behaviors tend to follow one of the 'desister' trajectories more frequently than males; that is, they tend to start later, discontinue sooner, and commit less serious offenses than their male peers (Broidy et al., 2003; Gelsthorpe & Sharpe, 2006). In addition, the development of undesirable behaviors contributing to delinquency in females are most frequently connected to negative social and familial relationships (i.e. family conflict; low parental attachment; low parental monitoring, deviant peer association; Gorman-Smith & Loeber, 2005; Fagan et al., 2007; Whitney et al., 2010) as well as exposure to, or being the victim of, violence (DeHart & Moran, 2015).

Multiple risk pathways are also reported for males, as they are more frequently exposed to multiple risk factors associated with later delinquency (e.g. exposure to violence, child abuse & neglect, lack of parental monitoring, harsher punishment practices; Fagan et al., 2007; Whitney et al., 2010) than females. Potential differences in risk pathways support exploring the development of behavior problems and delinquency in males and females as distinct patterns. For that reason, the current study assessed each hypothesized relationship separately for males and females.

### *1.2 Parental Factors that Influence Problem Behavior Development*

Parents play an important role in their child's life as they are responsible for guiding their development. Parenting is highly intertwined with cultural and social factors that impact what that role looks like and what it entails (Kotchick & Forehand, 2002). Problem behaviors, and eventual delinquency, are an issue across ethnic groups and communities across the United States (Duetsch, Crockett, Wolff, & Russell, 2012; Piquero & Brame, 2008). Prior research illustrates that the processes contributing to the development of delinquent behavior may vary between ethnic groups, a variation continually linked to socio-demographic factors (Duetsch et al., 2012; Myers & Taylor, 1998). However, the two most influential factors impacting the development of delinquency from early problem behaviors are parenting behaviors and affiliation with deviant peers (Duetsch et al., 2012). The former being the focus of the current study and the latter being an influence that parenting behaviors can attempt to control.

Multiple theoretical models delineate how certain parenting behaviors are related to the development of negative youth behavior. Classically, social learning theory suggests that a child witnessing another's use of negative coping strategies, such as

aggression, emotional abuse, or substance use, increases the likelihood of their using such strategies themselves (Bandura, 1973). Coercion theory suggests that when coercive, punitive, or harsh forms of discipline are used children and parents mutually reinforce the use of such strategies to continually obtain compliance (Granic & Patterson, 2006). Gottfredson & Hirschi's (1990) theory of crime states that a lack of parental control over a child's behavior negatively impacts the development of a child's ability to self-control, leading to an increase in externalizing behavior problems and even delinquency. Lastly, family stress theory, often applied to African American and minority families specifically, states that poor economic conditions and poverty negatively impact the family environment contributing to more stress, in turn impacting parent-child relationships, and subsequent child adjustment (McLoyd, 1990; 1998; Li, Nussbaum, & Richards, 2007).

### *1.2.1 Contextual Issues Related to Socio-economic Status and Ethnicity.*

Parenting is a dynamic process in that parenting behaviors and strategies used change and adapt based on multiple factors including the child's behavioral, academic, and developmental outcomes as well as interactions between parent and child (Harris, Vazsonyi, & Bollard, 2016; Lopez-Tamayo, Robinson, Lambert, Jason, & Ialongo, 2016; Wang, Hill & Hofkens, 2014). Also impacting this dynamic relationship are the sociodemographic and socioeconomic context within which the family exists (Lopez-Tamayo et al., 2016; Wang et al., 2014). Parenting behaviors are influenced by socioeconomic and sociodemographic factors; understandably so, as parenting is both a culturally and socially-entrenched construct (Kotchick & Forehand, 2002). Some parenting styles, behaviors, and strategies have been linked to shared cultural values as

well as the unique experience of living as an ethnic minority in the United States (Deutsch, Crockett, Wolff, & Russell, 2010).

Part of that unique experience is the impact of socioeconomic disadvantage. Minority families comprise 55%, while Caucasian families only 9%, of the overall poverty rate in the United States (Keiser Family Foundation, 2016). Living in impoverished and potentially dangerous communities, which has been linked to increased youth delinquency, likely requires increased levels of certain parenting behaviors to bolster positive youth outcomes (Ackerman, Schoff, Levinson, Youngstrom, & Izard, 1999; Deutsch et al., 2010). However, living in such conditions can contribute to parents working multiple jobs to cover the family's basic needs, thus limiting their ability to engage in certain parenting behaviors (Kotchick & Forehand, 2002). Two such parenting behaviors, parental monitoring and parental school involvement, were assessed in the current study as to how they may impact the relationship between childhood behavior problems and early adolescent delinquency in a sample of minority families. The literature regarding the constructs of parental monitoring and parental school involvement are reviewed below regarding how they reportedly relate to youth behavioral outcomes.

### *1.2.2 Parental monitoring.*

The construct of parental monitoring has historically included multiple parenting behaviors involving attention to, tracking of, and knowledge about a youth's behaviors, activities, adaptations, and their whereabouts (Dishion & McMahon, 1998). Stattin and Kerr (2000) offered a reinterpretation of the construct which had generally been adapted within the monitoring literature. Their definition postulated that 'parental monitoring' is truly referring to parental knowledge about their youth's activities as opposed to the

active behaviors parents use to obtain that knowledge (Stattin & Kerr, 2000).

Behaviorally, Stattin and Kerr (2000) posited three ways in which parents gain knowledge. Parents may ask their children, their peers, or peer's families about the child's activities; these behaviors are known as 'parental solicitation'. Parents may impose rules and restrictions on the child's activities and on who they may associate with when not at home; this is known as 'parental control'. Lastly, the child's spontaneous disclosure of pertinent information provides parents knowledge about the child's behavior outside the home (Stattin & Kerr, 2000).

Monitoring changes with a child's developmental level as they grow, mature, and gain greater autonomy. From infancy through early childhood, monitoring focuses on keeping a child in a physically safe place, keeping dangerous toys, animals, substances etc. away, and providing them safe activities to engage in (Dishion & McMahon, 1998; Kerr, Stattin, & Burk, 2010). Most of the literature on the impact of parental monitoring during this developmental period also focuses on physical safety, with research supporting the importance of providing a physically and emotionally safe environment to promote positive developmental outcomes (Breiner, Ford, & Gadsden, 2016).

During the middle childhood years, beyond monitoring physical safety, parents are tasked with being involved in their child's developing social and academic lives (Breiner, Ford & Gadsden, 2016; Stattin & Kerr, 2000). Monitoring a child's whereabouts when away from home or school, knowing who their peers are, and engaging with their peer's families, become more important (Breiner, Ford & Gadsden, 2016). Adolescence can present more challenges for parents, as youth are searching for more independence and autonomy, requiring further effort from parents to balance



monitoring their behaviors and allowing for these new developmental needs (Keijsers, 2015). At this age, monitoring strategies shift to include the importance of the adolescent's self-disclosure regarding their activities outside the home and what they engage in when with their peers (Keijsers, 2015; Stattin & Kerr, 2000; Racz & McMahon, 2011).

### *1.2.3 Parental monitoring, behavioral problems and delinquency.*

Parental monitoring has been studied regarding how it relates to multiple child and adolescent outcomes. Most consistently monitoring has been reported to have a positive impact on youth behavioral outcomes in families across ethnic backgrounds (Dishion & McMahon, 1998; Kerr, Stattin & Burk, 2010; Stattin & Kerr, 2000; Taylor, 1996). A 2009 meta-analysis reviewed 161 manuscripts assessing 432 positive and negative parenting variables and their influence on delinquency (Hoeve et al., 2009). Parental monitoring was found to have a significant association with delinquency; as monitoring increased, rates of delinquency decreased and was pronounced as one of the most noteworthy relationships in the meta-analysis (Hoeve et al., 2009). Delinquency type was found to moderate the relationship between monitoring and delinquent behavior, with studies exploring violent delinquency reporting stronger links between monitoring and delinquency compared to those assessing non-violent behavior (Hoeve et al., 2009). Lastly, it is noteworthy to mention that only about 7% of the reviewed studies included youth under the age of 12 (Hoeve et al., 2009). This further illustrates a lesser emphasis on exploring the impact of monitoring in middle childhood as opposed to adolescence within the literature; supporting the importance of the current study.

A more recent meta-analysis cast a wider net in reviewing 1,435 studies to assess the relationship between parenting dimensions and both child and adolescent externalizing problems, including delinquency (Pinquart, 2017). The parenting dimension of ‘behavior control’ included the use of parental monitoring practices and was negatively correlated with increases in externalizing behavior problems, when assessed both concurrently and longitudinally (Pinquart, 2017). Also, a recent study, not included in this meta-analysis, explored whether ‘good parenting’ behaviors may trigger turning points in the relationship between early aggressive behavior (ages 4-7) and later delinquency (age 15; Hay, Meldrum, Widdowson, & Piquero, 2017). Good parenting, which included an assessment of monitoring, was found to contribute to better outcomes; that is, lower rates of delinquency at age 15 in those exposed to higher quality parenting practices when controlling for child age (Hay et al., 2017).

Considering the importance of parental monitoring on both positive and negative outcomes for youth established in the literature, it is an important factor to explore with regards to how it may change the relationship between well-established risk factors, like childhood behavior problems, and adolescent delinquency. The current paper aimed to provide further understanding of whether parental monitoring moderates the longitudinal relationship between childhood behavior problems and delinquency in early adolescence.

#### *1.2.4 Parental school involvement.*

Parent involvement has long been a key component of early childhood interventions aimed at supporting children at risk for educational underachievement, on prominent example is Head Start launched in 1965 (Fantuzzo, McWayne, Perry, & Childs, 2004; Nokali, Bachman, & Votruba-Drzal, 2010). More recently, a portion of the

'No Child Left Behind' legislation, passed in the United States in 2001, again specified the importance of involving parents in their child's academic life (Domina, 2005; Pomerantz, Moorman, & Litwack, 2007). This legislation specified the need to increase such involvement and provided extra funds for schools to better engage and involve parents (Domina, 2005). A likely driving force for this encouragement was the growing literature suggesting a positive relationship between parental involvement in their child's education and that child's academic achievement (Castro, Exposito-Casas, Lopez-Martin, Lizasoain, Navarro-Asencio, & Gaviria, 2015). However, there is a lack of consensus across this literature regarding whether this relationship is truly a strong one, as the strength and direction varies based on multiple factors (Driessen, Smit, & Slegers, 2005; Fan & Chen, 2001; Pomerantz et al., 2007).

There are multiple ways in which parents can be involved in a child's academic life including activities both within the school and within the home. Involvement at home can include checking on and helping with homework or engaging in academic related activities such as practicing reading, writing, or building mathematics skills (Nokali et al., 2010; Pomerantz et al., 2007). Parents are also encouraged to be involved in their child's academics within the school setting through attending meetings (e.g. general school meetings, parent-teacher, parent-teacher association/organization etc.), through contact with teachers outside scheduled meetings, volunteering in the classroom, or by helping with school trips and events (Nokali et al., 2010; Pomerantz et al., 2007). As parental school involvement can take on different forms and can take place in different contexts, an inconsistent operationalization of this construct was found within the literature. For

the purpose of the current study, school-based parental school involvement activities were the focus.

Parental school involvement is believed to impact child outcomes in three ways. The first is through socialization, in that parents convey the importance of education by their own involvement in the child's education (Hayes, 2011; McNeal, 1999). The second is by creating a mechanism of social control in that a parent's interactions with teachers and their presence at school conveys that the parent is monitoring the child's school-based behavior (Domina, 2005; McNeal, 1999). Lastly, their involvement allows parents to receive early pertinent information regarding academic attainment or behavioral concerns, allowing for earlier intervention if needed (McNeal, 1999). It has been argued that the first two mechanisms have a greater impact on a child's behavioral, as compared to academic, outcomes; however, behavioral outcomes are less frequently explored (Domina, 2005; McNeal, 1999).

#### *1.2.5 Parental school involvement, behavior problems and delinquency.*

As reviewed above, parental school involvement has been explored as to its impact on academic outcomes; however, other influences of that same involvement are also important to assess. Unlike the literature exploring the link between involvement and academic outcomes, there is consensus within the limited literature exploring behavioral outcomes that more parental school involvement has a positive impact (Badri, Al Qubaisi, Al Rashedi, & Yang, 2014; Domina, 2005; Kirkhaug, Drugli, Klockner, & Morch, 2013; Nikoli et al. 2010). Most specifically, a parent's involvement within the school (e.g. attending school-based meetings, volunteering inside and outside the classroom) as opposed to school involvement within the home (e.g. helping with

homework; Domina, 2005) has been linked to more positive behavioral outcomes.

However, it is noteworthy that each of these studies used samples comprised predominantly of affluent Caucasian American participants or took place in countries other than the United States (i.e. Norway, United Arab Emirates).

Overall, studies of this construct using ethnically diverse samples have reported results with less consensus. Positive behavioral outcomes for African American and Latino youth with school-involved parents, were reported in some studies (Alvarez-Valdivia, Chavez, Schneider, Roberts, Becalli-Puerta, Perez-Lujan, & Sanz-Martinez, 2012; Fantuzzo, McWayne, Perry, & Childs, 2004; Powell, Son, File, & San Juan, 2010). However, each of these studies only explored the relationship over a short time period (i.e. one or two academic years) and focused on the early school years (i.e. pre-school through 3<sup>rd</sup> grade; Alvarez-Valdivia et al., 2012; Fantuzzo et al., 2004; Powell et al., 2010) or in high-school and adolescence (Chen, 2018; Wang et al., 2014) leaving a gap in the literature in understanding the relationship between parental school involvement in middle childhood and behavioral outcomes in minority youth.

Conversely, two recent meta-analyses reviewing the impact of parental involvement on school outcomes, including behavior, within African American and Latino youth reported less supportive results (Jeynes, 2016, 2017). Each stated that although effects regarding behavioral outcomes were in the expected direction (i.e. more involvement related to fewer behavior problems) the meta-analytic results did not reach significance perhaps due to so few studies exploring these outcomes within diverse samples. Further exploration of how parental school involvement impacts youth behavioral outcomes is clearly warranted, especially assessing the relationship during

middle childhood using a longitudinal design and a sample of minority families. The current study assisted in filling this gap in the literature.

### *1.3 Sex Differences in Parental Factors that Influence Problem Behavior Development*

There is generally a lack of consensus as to whether males and females receive differing levels of parental attention. One area that seems to have consensus is that male youth tend to receive less parental monitoring or restriction of their behavior as compared to same-aged female peers (Jacobson & Crockett, 2000; Li, Fiegelman, & Stanton, 2000; Racz & McMahon, 2011). Explanations for why this is the case focus on societal expectations and beliefs about the need to more firmly maintain a female's safety by keeping a closer eye on their behavior or keeping them closer to home (Fagen et al., 2011; Racz & McMahon, 2011). The literature on parental school involvement also conveys an unclear pattern regarding sex differences. Significantly more involvement has been reported for female students (e.g. Powell et al., 2010), for male students (e.g. Badri et al., 2014), and other studies report no significant sex differences (e.g. Simmons-Morton & Crump, 2003).

Regarding the relationship between parenting behaviors and a child's behavioral outcomes specifically, an unclear pattern also exists. Some studies report that males are monitored less by their parents and exhibit higher rates of delinquency compared to their female peers in both middle and high school-aged ethnically diverse samples (Graber, Nichols, Lynne, Brooks-Gunn, & Botvin, 2006; Jacobson & Crockett, 2000; Li et al., 2000; Richards et al., 2004). Conversely, no significant differences in parental monitoring of male and female youth have been reported (Griffin et al., 2000; Mazefsky & Farrell, 2005; Pinquart, 2017).

This lack of consensus as to whether males and females are treated differently concerning parental monitoring and parental school involvement indicates that further exploration was warranted. In combination with the discussion above regarding sex differences in the type and intensity of behavior problems and the development of early adolescent delinquency, the importance of exploring these developmental pathways separately for males and females is notable.

#### *1.4 Current Study*

A clear gap exists in the literature exploring the impact of parental monitoring and parental school involvement on the relationship between childhood behavior problems and early adolescent delinquency. It is important to explore how these parental behaviors may change the strength of the relationship between early problem behavior and later delinquency, as parenting often plays a role in the development of this negative trajectory (Deutsch et al., 2012; Piquero & Brame, 2008). Beyond simply delineating the relationship between these two constructs, evaluating parenting behaviors that influence the strength of this relationship is an important step toward the creation and implementation of interventions aimed at delinquency reduction or prevention.

The first goal of the current study was to predict early adolescent delinquency from childhood behavior problems using longitudinal multi-wave and multi-informant data from age eight through 15. A second goal was to assess whether the expected predictive link between childhood behavior problems and early adolescent delinquency is moderated by the level of parental monitoring and parental school involvement experienced during the interim period.

Based on the dissimilarities between the development and nature of delinquent behavior in males and females, as well as the unclear patterns reported regarding parental monitoring and parental school involvement, the current study explored each research question through separate analyses for males and females. This analytic strategy has been used in other studies based on the same logic and hypotheses about distinct risk and protective models for males and females (Whitney et al., 2010).

### *1.5 Hypotheses*

The outcome construct of ‘early adolescent delinquency’ was collected from two different data sources: teacher-reported delinquent behavior and youth self-reported delinquent behavior. Each hypothesis was assessed twice, once for each source of delinquent behavior. The first hypothesis focused on establishing the initial relationship between childhood behavior problems and early adolescent delinquency for males and females separately. Based on the literature reviewed above, it was hypothesized that childhood behavior problems, assessed in grade three, would significantly predict early adolescent delinquency, assessed in grade nine for both sexes, with a stronger significant relationship found for males.

The second and third hypotheses focused on the strength of this initial relationship, for both males and females, and how the strength of the relationship is impacted by parental monitoring and parental school involvement. Specifically, it was hypothesized that parental monitoring would moderate the relationship between childhood behavior problems and early adolescent delinquency, such that higher levels of monitoring would reduce the predictive association between early behavior problems and later delinquency. Similarly, it was hypothesized that parental school involvement would



moderate the relationship between childhood behavior problems and early adolescent delinquency, such that higher levels of school involvement would reduce the predictive association between early behavior problems and later delinquency.

The original plan was to assess two additional hypotheses exploring self-reported delinquency with and without questions about participant's use of substances (e.g. alcohol, tobacco, illegal drugs). However, after exploring the ninth grade sample data, a number of the questions were not administered to the participants at this timepoint. Due to this unavailability of the required data, the additional hypotheses exploring substance use as proposed in the prospectus were not completed.

## Chapter 2. Methods

### *2.1 Overview of the Study*

This study assessed whether parental monitoring and parental school involvement moderate the relationship between childhood behavior problems and early adolescent delinquency using longitudinal, multi-wave, and multi-informant data. Childhood behavior problems, assessed in the third grade, were used to predict early adolescent delinquency outcomes assessed in the ninth grade, with the parental moderator variables assessed in the fifth grade.

### *2.2 Study Context*

This study made use of longitudinal data collected as part of a larger prevention-focused study called Early Alliance (Dumas, Prinz, Smith, & Laughlin, 1999). The Early Alliance study started at the end of kindergarten in twelve elementary schools for three consecutive cohorts. In six of the schools, a school-wide conflict management program was implemented without individual or family-based programming. In the other six schools, more targeted programming was administered: first and second grade classrooms participated in a prosocial communication program; peer coping skills were promoted in a group-administered program with first-grade children; after-school reading mentoring was provided in first and second grades; and a home-delivered intervention for families was administered in first and second grades.

With the exception of the classroom program, the targeted programming focused only on children exhibiting elevated aggressive behavior. Half of the study sample was

comprised of those exhibiting elevated aggressive behavior in kindergarten, as indicated by elevated aggression subscale scores on the Child Behavior Checklist- Teacher Report Form (Achenbach, 1991). The other half of the study sample was randomly selected from all of the children without elevated aggression subscale scores.

After all intervention activities were complete, the full sample were followed longitudinally from grade three through grade nine. The sample included male and female children. The twelve elementary schools from which the Early Alliance sample was drawn had on average 88% of students on free lunch status (Dumas, Prinz, Smith, & Laughlin, 1999). The entire sample ( $N=750$ ) was followed longitudinally through ninth grade, with a retention rate of 82%.

### *2.3 Study Design*

The current study was a secondary data analysis utilizing the Early Alliance follow-up data collected for seven years after the intervention ended. The current sample was comprised of those participants followed longitudinally. Youth participants, their parent or guardian, and their teacher each completed measures annually during the follow-up period. For a case to be retained from the entire sample for the current analyses, data from four key sets of variables was required: demographic information assessed at the beginning of the Early Alliance study, teacher reported childhood behavior problems in grade three, parent-reported monitoring and school involvement data collected in grade five, as well as teacher-reported and self-reported delinquency variables collected in grade nine. Based on these requirements, the current analyses were completed with a sample of 556 participants.

## *2.4 Participants*

The current sample was comprised of participants followed longitudinally after their involvement in the Early Alliance trial. The sample was very homogeneous; the vast majority (95%) were African American youth and their families (Table 2.1).

Approximately equal numbers of male and female participants comprised the overall sample (50.4 % male; 49.6% female). Biological parents were 88.5% of the caregiver respondents with the other caregivers being either a grandparent (6.7%), other family member (2.2%), step-parent/parent's partner (0.6%) or adoptive/foster parent (2.2%). A majority of the sample's caregivers (81.5%) reported household incomes at or below \$29,999 per year and 74.1% reported being employed full time. Regarding educational attainment, 16.4% of caregivers attended some high school or less, 43.5% held either a GED or high school diploma, and 33.8% had attended some college or technical school. For participant family demographics presented separately for male and female participants see Table 2.1.

## *2.5 Measures*

### *2.5.1 Teacher-reported Behavior Problems.*

Childhood behavior problems in the third grade were assessed with the Child Behavior Checklist-Teacher report form (CBCL-TRF; Achenbach, 1991). The CBCL-TRF is a widely-used assessment tool that explores a range of behavioral issues in children and young adults ranging in age from two to 21. Grade three 'Externalizing Problems' scale scores from the CBCL-TRF were used as the predictor for all models in the current study.

Table 2.1 Participant demographics.

	Males	Females
<i>Sample size</i>	280	276
<b>Race of child</b>		
<i>African American</i>	268 (95.7%)	260 (94.2%)
<i>Caucasian</i>	4 (1.4%)	13 (4.7%)
<i>Other<sup>a</sup></i>	8 (2.9%)	3 (1.1%)
<b>Caregiver relationship to child</b>		
<i>Biological Parent</i>	254 (90.7%)	238 (86.2%)
<i>Grandparent</i>	15 (5.4%)	22 (8.0%)
<i>Other Family Member<sup>b</sup></i>	5 (1.8%)	7 (2.6%)
<i>Step-parent/Parent's partner</i>	1 (0.4%)	2 (0.8%)
<i>Adoptive/Foster Parent</i>	5 (1.8%)	7 (2.5%)
<b>Highest Education of Caregiver</b>		
<i>Some high school or less</i>	47 (16.8%)	44 (16%)
<i>High school diploma/GED</i>	132 (47.1%)	110 (39.9%)
<i>Some college or technical school</i>	88 (31.4%)	100 (36.2%)
<i>College graduate or more</i>	13 (4.6%)	22 (7.9%)
<b>Household Income</b>		
<i>&lt; \$9,999</i>	104 (37.1%)	96 (34.3%)
<i>\$10,000-\$19,999</i>	86 (30.6%)	77 (27.9%)
<i>\$20,000-\$29,999</i>	38 (13.6%)	52 (18.8%)
<i>\$30,000-\$39,999</i>	30 (10.8%)	20 (7.2%)
<i>\$40,000-\$49,999</i>	10 (3.6%)	15 (5.4%)
<i>&gt; \$50,000</i>	11 (3.9%)	13 (4.7%)
<i>Did not answer</i>	1 (0.4%)	3 (1.1%)
<b>Caregiver work status</b>		
<i>Employed</i>	205 (73.5%)	207 (75%)
<i>Unemployed</i>	34 (12.2%)	20 (7.2%)
<i>Homemaker</i>	20 (7.1%)	23 (8.3%)
<i>Student</i>	9 (3.2%)	7 (2.5%)
<i>Retired</i>	4 (1.4%)	7 (2.5%)
<i>Unable to Work</i>	8 (2.9%)	11 (4.0%)

Note. <sup>a</sup> Other race of child includes Asian/Pacific Islander; Hispanic; Other'; <sup>b</sup> Other family member includes aunt/uncle, biological sibling, or half sibling.

The CBCL-TRF has consistently reported good reliability and validity

(Achenbach, 1991; Achenbach & Rescorla, 2001; Nokali et al., 2010). Chronbach's alpha

for the teacher-reported externalizing scale was calculated and indicated good reliability ( $\alpha = 0.96$ ) based on current study data.

For each question, teachers endorsed whether the behavior was ‘*not true*’, ‘*somewhat or sometimes true*’, or ‘*very true*’ for each participating child. Ratings were scored on a scale ranging from zero to two, with two indicating higher levels of the behavior (Smith, Prinz, Dumas, & Laughlin, 2001). Raw scores were converted to age-standardized t-scores ( $M = 50$ ;  $SD = 10$ ) to allow for comparison to normative samples (Achenbach, 1991). Generally, CBCL-TRF T-scores less than 67 are considered as falling within the normal range, those from 67-70 are in the borderline clinical range, and scores above 70 are within the clinical range (Achenbach, 1991). Participant t-scores were used as the predictor (third grade) in each regression model.

### *2.5.2 Parental Monitoring.*

Parental monitoring was assessed when child participants were in grade five using the Monitoring and Control Questionnaire (MCQ; Kotchick et al., 1997). The questionnaire was verbally administered to each parent/guardian. This questionnaire consists of 34 items; the first 17 of which ask parents to report their perceptions of whether they know if their child engages in certain positive and negative behaviors and activities outside the home (i.e. monitoring subscale). The second 17 questions ask parents to report on their perception of whether they attempt to influence or control their child’s positive and negative behaviors and activities outside the home (i.e. control subscale). The control subscale was not included in the current study. Sample items from the monitoring subscale include ‘how often do you think you know about [child’s] choice of friends, who they are, what they are like?’ and ‘how often do you think you know

where [child] is and what [child] is doing when away from home?'. The four response options for each item ranged from 1 (*never*) to 4 (*always*). Total scores ranged from 17 to 68 with higher scores indicating more perceived knowledge about their child's behavior. Good reliability has been reported for the MCQ with alphas ranging from 0.84 to 0.91 (Kotchick et al., 1997; Jones, Shaffer, Forehand, Brody, & Armistead, 2003; Jones, Forehand, Dorsey, Foster & Brody, 2005). Chronbach's alpha for the parental monitoring subscale of the MCQ was calculated and indicated good reliability (alpha = .88) based on the current study data. Monitoring subscale scores for each participant were used as a moderator within the current analyses.

### 2.5.3 Parental School Involvement.

Parental school involvement was assessed when participants were in grade five, using the 'Parental Involvement in School' subscale of the Parent Involvement Survey (Smith, Connell, Wright, Sizer, Norman, Hurley, & Walker, 1997). The questionnaire was verbally administered to each parent/guardian. This subscale is comprised of nine questions assessing the frequency with which parents engage in involvement behaviors at school, as opposed to at home. Sample questions include 'how often do you attend PTA meetings?', 'how often have you visited you child's classroom?' and 'how often have you talked with your child's teacher?'. The six response options for each item were 1 (*never*), 2 (*at least once a year*), 3 (*at least once a semester*), 4 (*at least once a month*), 5 (*at least once a week*), and 6 (*every day*). Good reliability has been reported for both the questionnaire overall and the subscale used in the current study (Smith et al., 1997). Chronbach's alpha for the parental school involvement subscale was calculated and indicated good reliability (alpha = .77) based on the current study data. A total summed

score, ranging from 9-54, was calculated for each participant and used as a moderator within the current analyses.

#### *2.5.4 Self-reported Delinquency.*

Ninth grade self-reported delinquency was assessed using the youth Self-Reported Delinquency Questionnaire (SRD; Elliott & Ageton, 1980; Loeber, Stouthamer-Loeber, Van Kammen, & Farrington, 1989) which was verbally administered to each participant. Items required respondents to endorse whether they had engaged in a variety of misbehaviors including property crimes, theft, disruptive behavior, and aggressive/violent behavior. Each question consisted of two parts with the first asking participants to endorse (yes/no) whether they had engaged in the behavior in the past 6 months and if endorsed, asking participants about the frequency of the behavior using a 10-point scale. Good reliability with alphas ranging from 0.74 and 0.78 have been consistently reported (Huizinga & Elliot, 1986; Keijsers, Loeber, Branje & Meeus, 2012). Chronbach's alpha for the SRD was calculated and indicated good reliability (alpha = .83) based on the current study data. An SRD score was calculated for each participant by summing the total number of delinquent behaviors endorsed. Scores ranged from zero to 31 and the sum was used as one of the outcome variables within current analyses.

#### *2.5.5 Teacher-reported Delinquency.*

The 'Rule-Breaking Behavior' subscale of the Child Behavior Checklist-Teacher report form (CBCL-TRF; Achenbach, 2001) was used to assess ninth grade teacher-reported delinquency. The 2001 version of the CBCL-TRF was used at the ninth grade timepoint and employs the same response options (i.e. 'not true', 'somewhat or sometimes true', or 'very true') as the 1991 version used in third grade. The 2001 CBCL



TRF version follows the same process of calculating raw scores, conversion to t-scores and interpretation reviewed above. Chronbach's alpha for the ninth grade teacher-reported 'Rule-Breaking Behavior' subscale was calculated and indicated good reliability (alpha = 0.83) based on the current study data. Participant's t-scores on the 'Rule Breaking Behavior' subscale were used as one of the outcome variables in the current analyses.

## Chapter 3. Results

### *3.1 Overview of Analyses*

Hypotheses were tested using a hierarchical regression framework, with grade nine outcome variables (teacher-reported delinquent behavior; youth self-reported delinquency) regressed on third grade teacher-reported externalizing problems for males and females, separately. A hierarchical regression framework was utilized as it would allow for an assessment of the predictive relationship in addition to the moderation effect within each model. Hypotheses regarding moderation of the relationship between predictor and outcome variables by grade five parental monitoring and parental school involvement were assessed through the same regression framework. To aid in the interpretation of interaction effects, all variables included in the creation of the interaction terms were standardized prior to computation. Interaction terms were created by multiplying each centered moderator variable (parental monitoring or parental school involvement) by the centered predictor (third grade teacher-reported externalizing problems) variable.

Within each hierarchical regression model, the centered predictor variable was entered in the first step, the centered moderator variable was entered in the second step, and the interaction term (predictor by moderator) was entered in the third step. A significant interaction term, while any main effects remain significant, would indicate partial moderation had occurred. Further, if the predictor and moderator were significant in the prior step and no longer significant with the interaction term included (step three),

that would indicate that complete moderation had occurred. Significant interactions were further explored by calculating simple slopes at high (+1 SD) and low (-1 SD) levels of the moderator variable to determine the nature of the interaction (Cohen, Cohen, Aiken & West, 2003).

### *3.2 Assumption Checking*

Examination of scatterplots for all of the pairs of relationships among the predictor, putative moderators, and outcome variables indicated that there were no apparent violations of the linearity of assumptions. A check of the multicollinearity assumption indicated no violations based on VIF and tolerance scores each falling within the appropriate ranges (VIF < 10; tolerance above 0.2). The assumption of independent residuals was assessed using the Durbin-Watson statistic and scores ranged from 1.909 to 1.963, indicating no violations of this assumption. The scatterplots of standardized residuals by standardized predicted values showed no obvious signs of funneling, suggesting the assumption of homoscedasticity was met. Lastly, the assumption of normality of residuals was assessed through the creation of P-P plots for each model. The plots for model one and two had small deviations from the line, indicating no violations of this assumption. The plots for model three and four, had areas of greater deviation from the line. However, these deviations did not violate this assumption as extreme deviations from the line have not been found to impact reliability of results when using large sample sizes (i.e. sample size greater than 15), as was the case in the current study (Minitab, 2014).

### 3.3 Main Analyses

Descriptive data was compiled to provide a summary of the sample's demographics including race of participant, household income, and caregiver education, work status, and relation to participant (Table 2.1). Overall, participants were predominantly African American and came from low-income households. Caregiver respondents were most commonly a biological parent, had a high school/GED education, and were employed at the time of demographic assessment.

#### 3.3.1 Correlations.

Correlations between the predictor, moderators, and outcome variables, are presented, separately by males and females, in Table 3.1. Significant positive correlations were found between third grade teacher-reported externalizing problems and both ninth grade delinquency outcomes (teacher-reported and self-reported) for both sexes. Therefore, higher rates of third grade externalizing problems were related to higher rates of both teacher- and self-reported ninth grade delinquency. Each of these correlations were stronger for females than for males (Table 3.1).

For females only, third grade teacher-reported externalizing problems were significantly negatively correlated with parental monitoring and significantly positively correlated with parental school involvement. Neither of these correlations were significant for males. Parental monitoring was significantly negatively correlated with both outcomes for females only, indicating higher rates of parental monitoring in fifth grade were related to lower rates of both self-reported and teacher-reported delinquent behavior in ninth grade. For males, parental monitoring was only significantly negatively correlated with ninth grade self-reported delinquent behavior.

Parental school involvement was significantly positively correlated with parental monitoring only for males. For females, parental school involvement was significantly positively correlated with third grade externalizing problems indicating more problems in third grade were related to higher rates of parental school involvement in fifth grade.

Table 3.1 Correlations among all predictor, moderator and outcomes variables.

	1	2	3	4	5
<i>Males</i>					
1. G3 Teacher-reported Externalizing Behavior		-.073	.002	.372*	.166*
2. G5 Parental monitoring			.202*	-.091	-.164*
3. G5 Parental school involvement				.008	-.034
4. G9 Teacher-reported Delinquency					.216*
5. G9 Self-reported Delinquent Behavior					
<i>Females</i>					
1. G3 Teacher-reported Externalizing Behavior		-.182*	.105*	.410*	.176*
2. G5 Parental monitoring			.083	-.160*	-.132*
3. G5 Parental school involvement				.101*	.046
4. G9 Teacher-reported Delinquency					.277*
5. G9 Self-reported Delinquent Behavior					

Note. \*  $p < .05$

Additionally, parental school involvement was significantly positively correlated with teacher-reported delinquency for females only, thus higher rates of parental school involvement in fifth grade was related to more teacher-reported delinquency reported in grade nine. Lastly, both outcome variables were significantly positively correlated with each other for both males and females, indicating concordance between ninth grade delinquency outcomes.

### 3.3.2 Regressions and Moderation.

Four hierarchical regression analyses were conducted for males and females separately; results for each model are displayed in tables 3.2 through 3.5. Hypothesis one

stated that third grade teacher-reported externalizing problems would significantly predict both ninth grade delinquency variables (teacher-reported; self-reported), with a stronger relationship found for males. The results of the current study supported hypothesis one, indicating a predictive relationship for both males and females. Stronger prediction was found, as indicated by larger F-values, in model one & two which explored the prediction of teacher-reported delinquency.

The predictive relationships were not stronger for males, as hypothesized. Cohen's  $f^2$  effect sizes were calculated for each model. Medium effect sizes were found for both males and females in models exploring the teacher-reported delinquency outcome (males Cohen's  $f^2 = 0.16$ ; females Cohen's  $f^2 = 0.20$ ). Small, and identical, effect sizes were found for both sexes in the models exploring the self-reported delinquency variable (model three & four: Cohen's  $f^2 = 0.03$ ).

The second and third hypotheses focused on moderation of the predictive relationship between third grade teacher-reported externalizing problems and each ninth grade outcome variable. Models one and three explored whether parental monitoring significantly moderated these relationships and models two and four explored whether parental school involvement significantly moderated the relationships, separately for males and females. Significant moderation was not found as evidenced by non-significant unstandardized betas for the moderator variables in step three of all models. Therefore, hypothesis two & three were not supported.

Table 3.2 Model 1 - Hierarchical regression analyses of grade 3 externalizing problems, grade 9 teacher-reported delinquency, and the moderation effect of grade 5 parental monitoring.

Step	Predictors	<i>B</i>	<i>SE B</i>	$\beta$	<i>t</i>	<i>F</i>	<i>R</i> <sup>2</sup>	$\Delta R^2$
<i>Males</i>								
1						44.71*	.139	.139
	Constant	60.867	.536		113.50*			
	G3 Externalizing	.303	.045	.372	6.687*			
2						23.05*	.143	.004
	Constant	48.365	5.657		8.549*			
	G3 Externalizing	.299	.045	.368	6.589*			
	G5 Parental monitoring	-.091	.078	-.065	-1.157			
3						15.34*	.143	.000
	Constant	48.313	5.670		8.521*			
	G3 Externalizing	.297	.046	.365	6.451*			
	G5 Parental monitoring	-.088	.079	-.063	-1.112			
	G3 Externalizing X G5 Parental monitoring	-.002	.007	-.016	-.281			
<i>Females</i>								
1						55.50*	.168	.168
	Constant	58.776	.476		123.57*			
	G3 Externalizing	.307	.041	.410	7.450*			
2						29.14*	.176	.008
	Constant	48.996	6.045		8.106*			
	G3 Externalizing	.295	.042	.394	7.060*			
	G5 Parental monitoring	-.126	.080	-.088	-1.572			
3						20.35*	.183	.007
	Constant	46.294	6.269		7.385*			
	G3 Externalizing	.32	.043	.418	7.245*			
	G5 Parental monitoring	-.102	.082	-.071	-1.250			
	G3 Externalizing X G5 Parental monitoring	-.011	.007	-.090	-1.571			

Note. \*  $p < .05$

Table 3.3 Model 2 - Hierarchical regression analyses of grade 3 externalizing problems, grade 9 teacher-reported delinquency, and the moderation effect of grade 5 parental school involvement.

Step	Predictors	<i>B</i>	<i>SE B</i>	$\beta$	<i>t</i>	<i>F</i>	<i>R</i> <sup>2</sup>	$\Delta R^2$
<i>Males</i>								
1						44.71*	.139	.139
	Constant	60.867	.536		113.50*			
	G3 Externalizing	.303	.045	.372	6.687*			
2						22.28*	.139	.000
	Constant	42.667	2.802		15.231*			
	G3 Externalizing	.303	.045	.372	6.675*			
	G5 Parental school involvement	.013	.093	.008	.140			
3						14.90*	.139	.000
	Constant	42.709	2.806		15.219*			
	G3 Externalizing	.302	.045	.372	6.653*			
	G5 Parental school involvement	.014	.093	.008	.148			
	G3 Externalizing X G5 Parental school involvement	-.004	.008	-.029	-.522			
<i>Females</i>								
1						55.50*	.168	.168
	Constant	58.776	.476		123.57*			
	G3 Externalizing	.307	.041	.410	7.450*			
2						28.31*	.172	.004
	Constant	40.604	2.510		16.174*			
	G3 Externalizing	.303	.041	.404	7.301*			
	G5 Parental school involvement	.088	.084	.058	1.052			
3						19.20*	.175	.003
	Constant	40.666	2.511		16.193*			
	G3 Externalizing	.301	.041	.402	7.247*			
	G5 Parental school involvement	.091	.084	.060	1.089			
	G3 Externalizing X G5 Parental school involvement	.007	.007	.055	.995			

Note. \**p* < .05



Table 3.4 Model 3 - Hierarchical regression analyses of grade 3 externalizing problems, grade 9 self-reported delinquency, and the moderation effect of grade 5 parental monitoring.

Step	Predictors	<i>B</i>	<i>SE B</i>	$\beta$	<i>t</i>	<i>F</i>	<i>R</i> <sup>2</sup>	$\Delta R^2$
<i>Males</i>								
1						7.84*	.027	.027
	Constant	1.745	.175		9.960*			
	G3 Externalizing	.041	.015	.166	2.800*			
2						7.39*	.051	.023
	Constant	-.664	.905		-.733			
	G3 Externalizing	.039	.015	.155	2.633*			
	G5 Parental monitoring	-.066	.025	-	-2.603*			
				.153				
3						4.92*	.051	.000
	Constant	-.641	.916		-.700			
	G3 Externalizing	.038	.015	.153	2.567*			
	G5 Parental monitoring	-.065	.026	-	-2.558*			
				.152				
	G3 Externalizing X G5 Parental monitoring	.000	.002	-	-.173			
				.010				
<i>Females</i>								
1						8.80*	.031	.031
	Constant	1.461	.138		10.580*			
	G3 Externalizing	.036	.012	.176	2.967			
2						5.92*	.042	.011
	Constant	-.390	.741		-.527			
	G3 Externalizing	.032	.012	.158	2.615*			
	G5 Parental monitoring	-.040	.023	-	-1.722			
				.104				
3						4.02*	.042	.000
	Constant	-2.79	.775		-.360			
	G3 Externalizing	.030	.013	.150	2.398*			
	G5 Parental monitoring	-.042	.024	-	-1.783			
				.110				
	G3 Externalizing X G5 Parental monitoring	.001	.002	.031	.497			

Note. \*  $p < .05$

Table 3.5 Model 4 - Hierarchical regression analyses of grade 3 externalizing problems, grade 9 self-reported delinquency, and moderation effect of grade 5 parental school involvement.

Step	Predictors	<i>B</i>	<i>SE B</i>	$\beta$	<i>t</i>	<i>F</i>	<i>R</i> <sup>2</sup>	$\Delta R^2$
<i>Males</i>								
1						7.84*	.027	.027
	Constant	1.745	.175		9.960*			
	G3 Externalizing	.041	.015	.166	2.800*			
2						4.08*	.029	.002
	Constant	-.745	.915		-.815			
	G3 Externalizing	.041	.015	.166	2.798*			
	G5 Parental school involvement	-.018	.030	-.035	-.584			
3						3.04*	.032	.003
	Constant	-.765	.915		-.836			
	G3 Externalizing	.042	.015	.167	2.819*			
	G5 Parental school involvement	-.018	.030	-.036	-.600			
	G3 Externalizing X G5 parental school involvement	.003	.003	.058	.985			
<i>Females</i>								
1						8.80*	.031	.031
	Constant	1.461	.138		10.580*			
	G3 Externalizing	.036	.012	.176	2.967*			
2						4.50*	.032	.001
	Constant	-.637	.730		-.872			
	G3 Externalizing	.035	.012	.174	2.898*			
	G5 Parental school involvement	.011	.024	.028	.461			
3						3.75*	.040	.008
	Constant	-.610	.729		-.837			
	G3 Externalizing	.034	.012	.169	2.834*			
	G5 Parental school involvement	.013	.024	.031	.519			
	G3 Externalizing X G5 parental school involvement	.003	.002	.088	1.485			

Note. \*  $p < .05$

### 3.3.3 Additional Descriptive Data Summary

As an additional summary of the data patterns, means and standard deviations for all variables were calculated, separately for males and females (Table 3.6). No statistical tests were applied to these data. Given earlier discussion of existing literature of each construct assessed by the current study, there were noteworthy differences between males and females for parental monitoring, teacher-reported delinquency, and self-reported delinquency. Each difference was in the same direction as reported in prior literature, with parents reporting monitoring females, on average, at higher rates than males and males, on average, reportedly engaging in higher rates of delinquent behavior, based on both self- and teacher-report. Third grade externalizing problems and fifth grade parent school involvement, on average, were very close for both males and females.

Table 3.6 Means and standard deviations for each construct.

	Males Mean (SD)	Females Mean (SD)
G3 Teacher-reported Externalizing Problems	60.60 (11.85)	59.50 (11.55)
G5 Parental Monitoring	60.18 (6.86)	62.88 (6.00)
G5 Parental School Involvement	28.48 (5.79)	28.55 (5.73)
G9 Teacher-reported Delinquency	61.03 (9.64)	58.61 (8.64)
G9 Self-reported Delinquency	1.77 (2.96)	1.44 (2.33)

Note. G3 teacher-reported externalizing behavior problems and G9 teacher-reported delinquency are t-scores assessed from the CBCL-TRF; G5 parental monitoring and G5 parental school involvement data are count variables assessed from questionnaires using Likert scales; G9 self-reported delinquency is a count variable assessed from a questionnaire responded to with either yes/no.

## Chapter 4. Discussion

Investigating the impact of parental monitoring and parental school involvement on the longitudinal prediction of early adolescent delinquency from childhood externalizing behaviors is an important area of study. Further exploration of whether these parenting behaviors may change the strength of the relationship between early problem behavior and later delinquency was warranted, especially as it relates to differences between males and females. The current study reduces a gap in the literature through assessing whether parental monitoring and parental school involvement may moderate the relationship between third grade teacher-reported externalizing problems and ninth grade teacher- and self-reported delinquency. Utilizing data from a longitudinal study collected over multiple waves and from multiple reporters, the current hypotheses were explored separately for males and females to delineate potential differing patterns given their documented divergent behavioral trajectories.

For both males and females, third grade teacher-reported externalizing problems significantly predicted both teacher-reported and self-reported ninth-grade delinquency; providing support for the first hypothesis (Tables 3.2, 3.3, 3.4 and 3.5). Further, correlation results indicated, for both sexes, that higher rates of early externalizing behaviors were related to higher rates of both self-reported and teacher-reported delinquency in early adolescence. These results provide further support for prior literature in suggesting that early externalizing behaviors can forecast the development of delinquent behavior in

early adolescence (Broidy et al., 2003; Hay et al., 2017; Hoeve et al. 2009; Loeber & Hay, 1997; Sandler, Schoenfelder, Wolchik, & MacKinnon, 2011).

The first hypothesis proposed that the predictive relationship between third grade externalizing behaviors and ninth grade delinquency would be stronger for male participants; however, this was not supported. Medium and small effect sizes were found for the models exploring the prediction of teacher-reported delinquency and self-reported delinquency, respectively; indicating a similar predictive strength for both male and female participants. The average grade three teacher-reported externalizing problem t-scores were also similar for males and females (Table 3.6). These findings challenge the assumption that males exhibit higher rates of problem behavior than females, especially early externalizing behaviors. However, additional research to further delineate whether the lack of differentiation between males and females in the predictive relationships is true or an artifact of exploring delinquency as a broad construct is warranted. For example, future studies could model the predictive relationships explored in the current study as to whether the types of behaviors being disclosed (i.e. violent vs. non-violent) provide any further understanding of sex differences in early adolescent delinquent behavior.

The second hypothesis explored whether fifth grade parental monitoring moderated the relationship between early externalizing behavior and teacher- and self-reported ninth grade delinquency, separately. Significant moderation of these relationships by parental monitoring was not found. Reasons for this finding may be explained by methodological issues with how parental monitoring was operationalized in the current study. The average parental monitoring scores, assessed through the use of the

Monitoring and Control Questionnaire (MCQ; Kotchick et al., 1997) were quite high (males: 60.18; SD = 6.86; females: 62.88; SD=6.00), especially given the maximum score on the MCQ is 68, of which 20% of the sample received. These high average scores suggest that ceiling effects and/or socially desirable response bias could have influenced the scores. A ceiling effect occurs when a high proportion of the sample obtains maximum or close to maximum scores on an observed construct. When present, a ceiling effect generates concern as to whether an instrument has accurately measured the construct with enough variability (Wang, Zhang, McArdle, & Salthouse, 2009). Prior studies that have utilized the MCQ reported means ranging from 45.38 and 53.95 and standard deviations ranging from 4.90 to 10.82, indicating the measure can elicit results without a ceiling effect.

Socially desirable response bias is the tendency to over- or under-report certain behaviors in an effort to present oneself in a more positive light as well as in line with social norms or expectations (Bornstein et al., 2015). As reviewed above, parenting is highly intertwined with cultural and social factors that impact what that role looks like and what it entails (Kotchick & Forehand, 2002). Thus, it is possible that parents in the current study over-estimated their monitoring behaviors in an effort to indicate more knowledge of the who, what, and where of their child's behavior. A recent study exploring socially desirable reporting of other parenting behaviors (e.g. parental warmth; parental hostility) in ten countries reported high levels of socially desirable response bias, especially regarding the use of negative parenting behaviors (Bornstein et al, 2015). The authors also found that social desirability did not differ significantly between those in the mother or father role, and that higher rates were found in parents from minority ethnic

groups (Bornstein et al, 2015). Given the current sample was predominantly African American and the high average of parental monitoring reported, it is possible that socially desirable response bias impacted the current results.

Despite a lack of moderation, significant correlations were found regarding parental monitoring in the expected direction. Higher levels of parental monitoring, for both males and females, were related to lower levels of self-reported delinquency. For females only, higher rates of parental monitoring were also related to lower rates of teacher-reported delinquency. These findings further support prior literature indicating that the relationship between parental monitoring and subsequent delinquent behaviors is an important one (Dishion & McMahon, 1998; Hoeve et al., 2009; Kerr, Stattin & Burk, 2010; Pinquart, 2017; Stattin & Kerr, 2000; Taylor, 1996).

For females only, another pattern emerged. Females with lower rates of externalizing problems in third grade were found to experience higher levels of parental monitoring in fifth grade. This finding at first, seems counterintuitive. Prior research suggests a consensus that male youth tend to receive less parental monitoring or restriction on their behavior compared to female peers, theoretically due to societal expectations and beliefs about the need to maintain female's safety by keeping a closer eye on them (Jacobson & Crockett, 2000; Li, Fiegelman, & Stanton, 2000; Racz & McMahon, 2011). These sex differences in parental monitoring were further confirmed by results in the current study. Female participants' guardians reported a higher average of monitoring than reported for male participants, even in light of possible ceiling effects.

Higher rates of monitoring found overall for females could explain the counterintuitive finding that those with lower rates of third grade externalizing problems

were monitored at higher rates in fifth grade. Twenty-five percent of the female sample received the maximum score on the MCQ compared to 16% of the male sample. This discrepancy suggests that females receive more parental monitoring, regardless of their engagement in problem behavior. Conversely, this negative correlation also suggests that females with higher levels of externalizing problems in third grade received lower rates of monitoring in fifth grade. A possible explanation for this relationship could be a reduction in engaging in parental monitoring behaviors by fifth grade due to low levels of parental self-efficacy after unsuccessful attempts to control or change a child's behavioral problems. This suggestion mirrors work within the parental school involvement literature. Parents exhibit an increased avoidance of engagement in school involvement behaviors if their child was recurrently being reprimanded for school-based behavioral problems (Hornby & Lafaele, 2011). Future research exploring the relationship between parental monitoring and problem behaviors would benefit from assessing changes in parental self-efficacy and child behavioral problems across time in an effort to quantify their impact on engagement in parenting behaviors. Additionally, given the potential methodological issues evidenced in the current study, future studies should utilize multiple reporters of parental monitoring (i.e. both parent and youth report) to illuminate such issues as well as gain a more comprehensive understanding of monitoring behavior.

The third hypothesis explored whether fifth grade parental school involvement moderated the relationship between early externalizing behavior and teacher- and self-reported ninth grade delinquency, separately. Significant moderation of these relationships by parental school involvement was not found. Concerns about measurement bias, as reviewed above regarding the parental monitoring construct, were



not evident for the parental school involvement data. An examination of histograms indicated normal distributions for both males and females. Prior research has reported varying patterns of parental school involvement with higher levels of involvement reported for female students, male students, as well as no significant differences (Badri et al., 2014; Powell et al., 2010; Simmons-Morton & Crump, 2003). In the current study, means and standard deviations were nearly identical, indicating equitable levels of parental school involvement for male and female participants (Table 3.6).

Despite the lack of moderation of the predictive relationships by parental school involvement, significant correlations were found for both males and females. However, unlike for the other constructs, no consistent findings for both sexes were found. For males, parental school involvement had a near zero correlation with third grade teacher reported externalizing problems. While for females, higher rates of third grade teacher-reported externalizing problems were related to higher rates of parental school involvement in fifth grade. This suggests that when females are exhibiting problem behavior at school, parental school involvement was one avenue through which parents perhaps attempted to intervene. This was not the case for males who had similar levels of externalizing problems reported by their teachers in third grade and no correlation evidenced between rates of externalizing problems and parental school involvement.

For males only, parents who reported high levels of school involvement also reported high levels of parental monitoring, indicating that parents of male participants were either monitoring their progress at both home and school or engaging in less monitoring across contexts. It is unclear why a correlation between parental monitoring and parental school involvement was not found for females, especially given the high rate

of parental monitoring reported for females and the relative similarity between monitoring behaviors in multiple contexts. Further studies in this area would benefit from exploring whether demographic variables, such as familial size, household income, or parent/guardian work status provide a more in depth understanding of these differing patterns.

Regarding the two outcome variables, higher rates of parental school involvement were only significantly related to higher rates of ninth grade teacher-reported delinquency for females. This suggests that more school involvement is related to higher rates of teacher-reported delinquency in ninth grade. As higher rates of third grade teacher-reported externalizing problems were related to higher rates of parental school involvement in fifth grade for females, perhaps this finding is capturing the developmental trajectory of problem behaviors in females and the efforts by parents to intervene. Further exploration utilizing more focused statistical methods, such as path analyses, would allow for better understanding of these relationships.

Neither teacher- nor self-reported delinquency were correlated with parental school involvement for males. These results taken in concert with the lack of a relationship between parental school involvement and third grade externalizing behavior, suggests this parenting behavior is not as impactful as hypothesized for males. Clearly, other factors contribute to a parent's level of engagement in school involvement activities for male students beyond behavioral concerns. Again, investigating alternate factors, such as the demographic factors mentioned above, as to whether they contribute to engagement in school involvement by parents of male students would increase both our

understanding of the impact, as well as inform whether this is an important area of intervention for males exhibiting problem behavior.

The literature exploring parental school involvement, albeit limited, reports consensus in that more parental school involvement has a positive impact on youth behavioral outcomes. However, most studies used samples comprised predominantly of affluent Caucasian American participants or took place in countries other than the United States (Jeynes, 2016; 2017). Studies that included African American and Latino youth in their samples, focused on the early school years (i.e. pre-school through 3<sup>rd</sup> grade; Alvarez-Valdivia et al., 2012; Fantuzzo et al., 2004; Powell et al., 2010) or on high-school and adolescence (Chen, 2018; Wang et al., 2014). The current findings broaden the literature in this area through exploring this construct in a predominantly minority sample during middle childhood. However, the results also call into question the positive impact of parental school involvement with regarding to behavioral change for males, specifically. Further research is warranted to provide a better understanding of the impact of this construct on behavioral outcomes in minority youth.

Overall, the results of the current study revealed differing patterns in males and females that would have been lost if the full sample had been analyzed as a whole. Beyond the similar results found for males and females for the first hypothesis and the significant correlations found for both sexes between the outcome variables, differing patterns for males and females were clear. These results provide further support for the importance of exploring developmental research questions separately for males and females, as analyzing samples as a whole could lead to missing valuable differences in

the identification of factors contributing to the development of problem behaviors across childhood and into early adolescence.

#### *4.1 Strengths and Limitations*

Use of a large longitudinal sample with data from multiple reporters are clear strengths of the study. Longitudinal designs provide benefits over cross-sectional designs, especially with regard to answering developmental research questions about risk and protective factors. A cross-sectional approach would have been more prone to the impact of individual differences and cohort effects, which was less likely with the longitudinal approach. Even though attrition is an inherent risk in longitudinal designs, the current study was based on a sample with high retention (i.e. 82%), which protected the integrity of the analysis.

The large sample size reduced the likelihood that inadequate power diminished the study's ability to evaluate the hypotheses. Another strength of the current study was the assessment of constructs through the use of multiple reporters (i.e. self-report, parent-report, teacher-report). Accordingly, observed relationships between time points were not attributable to source variance: third grade data came from teachers, fifth grade data came from parents, and ninth grade data came from youth and from teachers who were different from the third-grade teachers. Utilizing data from different reporters across time provides a more independent and perhaps more valid assessment of intersecting constructs than could be derived in the absence of repeated measurement or based only on a single-reporter source.

A discussion of potential limitations of the study is warranted. Measurement in the study relied on teacher, parent, and youth as reporters. Independence between time

points notwithstanding, the reliance on these reporters is a potential limitation. For example, assessment of delinquency by ninth grade teachers did not take into account youth misconduct in the community that was outside a teacher's awareness.

Alternatively, youth self-report of delinquency overcame the potential limitation of teacher report but had its own caveat, namely that some youth might have censored their reporting. Assessment of parental monitoring and involvement with school presents different challenges. Relying solely on parent self-report of monitoring is a potential limitation. However, identifying a second credible source for parental self-monitoring was and is a challenge. Fifth-grade children could comment on monitoring by their parents but there is no reason to believe that this would have been a valid, or a more valid, method of assessment. Similarly, teachers could have been consulted with respect to parent involvement with school, but some of the school-involvement by parents might be out of sight of teachers (e.g., participation in school support activities, interactions with teacher in prior school year).

The origins and nature of the sample warrant further comment. The longitudinal sample was established when the children were in the latter part of Kindergarten. At the onset, half of the sample (higher risk) consisted of children with signs of elevated aggressive behavior while the other half (lower risk) consisted of children without this elevation. More importantly, children were exposed to various levels and types of preventive intervention components in the two years (during first and second grades) prior to the third-grade start of the present study. Half of the higher and lower risk children were only exposed to a school-wide conflict management program, without intervention components that focused on family or individual-child issues. For the other

half of the sample, the higher risk children received multiple intervention components including home-delivered family programming. The issue at hand is whether the intervention histories affected the analyses in the present study and might bear on interpretation of the findings. It is possible but probably unlikely that moderation effects would have emerged were it not for prior intervention exposure. Similarly, it is possible that the strength of observed relationships between third-grade and ninth-grade variables might have been impacted by children's exposure histories. However, given the heterogeneity of the sample and the various intervention components, there is not a basis to discern whether the statistical relationships were increased, decreased, or unaffected by prior exposure to interventions. In the absence of evidence to the contrary, the most plausible conclusion is that observed relationships and the absence of significant moderation effects are most likely robust, all things considered.

#### *4.2 Intervention Implications*

The current study adds to the literature by providing further support for the connection between early behavior problems and delinquency in early adolescence. The current findings further indicate the importance of promoting early intervention to reduce childhood behavioral problems in an effort to limit a negative behavioral trajectory into early adolescence. The literature on the development of problem behavior, further supported by the current study results, illustrates the positive influence of implementing or altering certain parental strategies in an attempt to challenge or disrupt continued misbehavior.

Although behaviors associated with an active parent role, namely parental monitoring and involvement at school, were not found to significantly moderate the

relationship between childhood problem behavior and adolescent delinquency, correlations between the constructs were suggestive. Higher levels of parental monitoring were associated with lower levels of subsequent delinquency supporting the importance of parenting as a method of intervention. Interventions that aim to provide psychoeducation about the important role parents play in childhood development, that support families in implementing evidence-based parenting strategies, and that aid families in overcoming barriers to utilizing such parenting strategies should continue to be implemented.

It also warrants mentioning that other evidence-based interventions for behavioral, and often corresponding emotional issues, such as those delivered through individual therapy in childhood and adolescence (e.g. cognitive-behavioral therapy, motivational interviewing, acceptance and commitment therapy) strongly suggest parental therapeutic involvement when possible. Parental figures play a significant role in a child's life by way of modeling and reinforcing the use of appropriate behavioral and emotional regulation strategies outside of therapeutic sessions.

#### *4.3 Conclusion*

The current study builds on the important literature that delineates which factors contribute to the development of early adolescent delinquency. Predicting delinquency in early adolescence and identifying factors contributing that prediction, are each of great importance as early intervention is most beneficial in changing negative behavioral outcomes. Parenting behaviors play a significant role in childhood and early adolescent outcomes. A continued focus on assessing the mechanism through which parents can positively impact the developmental trajectories of male and female youth, is imperative.

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