

Early Socialization and Later Aggression: A Multi-Informant Longitudinal Analysis of  
Parent and Peer Relationships in Early Childhood and Aggression in Grade School

A Thesis submitted in partial fulfillment of the requirements for the degree of Master of  
Arts at George Mason University

by

Jerry L. Mize  
Master of Arts, 2016  
George Mason University

Director: Adam Winsler, Associate Professor  
Psychology

Spring Semester 2018  
George Mason University  
Fairfax, VA

## ACKNOWLEDGEMENTS

Thank you to George Mason University and to NICHD (See Laible et al., 2016 for references) for support and access to the data used in this project. I would also like to thank a number of individuals without this project would not have been possible. First my committee members Drs. Adam Winsler, Timothy W. Curby, Olga Kornienko, and Pamela Garner. Notably, I would like to thank Dr. Adam Winsler for serving as the chair to the committee and providing feedback through the many drafts leading to this final document. Dr. Timothy W. Curby was also helpful by providing access to the data and in guiding me through the various statistical skills needed for this project. Additionally, I would like to thank Dr. Olga Kornienko for providing her expertise in some drafts and assistance in designing the testing models. I would also like to thank fellow students in the Applied Developmental Psychology program at George Mason University, Xiaozhu An, Courtney Ricciardi, Alexa Roth, Lucia Sillterova, Reba Troxler, and Angelique B. Williams, for allowing me to consult with them on statistical methods and providing personal support throughout this process. Finally, I would like to thank my partner, Dr. Matthew J. Smith, for his support throughout this project and during my graduate training as an MA student in the Applied Developmental Psychology program at George Mason University. Thank you all!

Sincerely,  
Jerry

## TABLE OF CONTENTS

	Page
Abstract.....	vi
Introduction.....	1
Socialization and aggression.....	3
Parental contributions to aggression.....	6
Peer contributions to aggression.....	8
Gender differences in aggression.....	10
Developmental changes in aggressive behavior.....	11
The current Study.....	12
Method.....	15
Data and Procedures.....	15
Participants.....	16
Measures.....	16
Parental Conflict and Closeness.....	16
Parental Sensitivity.....	17
Peer Interactions.....	17
Maternal and Teacher Reports of Aggression.....	18
Self-Report Aggressive Behavior.....	19
Analytical approach.....	21
Results.....	23
Preliminary Analysis.....	23
Tests of Changes in Aggression Across Time.....	24
Model Predicting Maternal Reports of Aggression.....	26
Model Predicting Teacher Reports of Aggression.....	29
Model Predicting Self-Reports of Aggression.....	29
Discussion.....	31
Considering Findings across informants.....	33

Normative Aggression during Childhood and Adolescence.....	34
Limitations and suggestions for future research .....	37
Conclusion .....	39
Appendix of Tables and Figures .....	40
References.....	47

## **ABSTRACT**

### **EARLY SOCIALIZATION AND LATER AGGRESSION: A MULTI-INFORMANT LONGITUDINAL ANALYSIS OF PARENT AND PEER RELATIONSHIPS IN EARLY CHILDHOOD AND AGGRESSION IN GRADE SCHOOL**

Jerry L. Mize, M.A.

George Mason University, 2018

Thesis Director: Adam Winsler

Although the childhood aggression literature is well developed, there is relatively little research examining longitudinal relations between early childhood parenting and peer interaction and later aggressive behavior in children. Relationships with parents affect how future relationships are approached, and receiving sensitivity from and having a secure relationship with one's parents are related to less child aggression. Additionally, peer relationships contribute to the development of aggression. The current study examines how characteristics of parental quality (maternal sensitivity, conflict, and closeness) and interactions with peers (prosocial, aggression, and positive and negative contributions to play) at 54-months are associated with children's aggressive behavior, as reported by multiple informants, in 3<sup>rd</sup> grade through 6<sup>th</sup> grade ( $N = 1,364$ ; 52.4% female; 85.4% White). Data came from the SECCYD, and I tested these associations with structural equation modeling using Mplus version 6. Maternal, teacher, and self reports of aggressive behavior in grades 3-6 were examined. In the maternal report model, I

report stability in aggression behaviors overtime and that maternal relationships in early childhood are related to general and relational aggression, but generally unrelated to changes in child general and relational aggression across grades 3-6. I also did not find much of a relation between friendships in early childhood and later aggression. Further, only the maternal report yielded significant findings. I conclude that maternal relationships could be predictive of maternal views of their children's initial aggressive behavior, both relationally and in general, but not predictive of changes in aggression. Overall, these findings suggest that prevention and intervention efforts should be focused prior to third grade.

*Keywords:* aggression; parent relationships; peer relationships; early childhood; adolescence

## INTRODUCTION

Behavior is considered aggressive when there is an intent to harm another or when the receiver recognizes such harm, or the intent of such, as a consequence of the perpetrator's behavior (Heilbron & Prinstein, 2008). Such acts can be relational or physical (Becht, Prinzie, Deković, Van Den Akker, & Shiner, 2016; Boutin, Verlaan, Denault, & Dery, 2017; Pang Ang, Kom, Tan, & Chang, 2013). Physical forms of aggression are overt behaviors that involve physical harm or humiliation such as hitting, biting, and spitting (Boutin et al., 2017; CDC, 2017; Menard & Grotspeter, 2011), while relational aggression is exhibited indirectly verbally or in forms of exclusion, withholding friendship, or gossiping (Bowie, 2007; CDC, 2017; Cleverley, Szatmari, Vaillancourt, Boyle, & Lipman, 2012). Relational aggression has also sometimes been referred to as “social manipulation” (Österman et al., 1998). A sizeable area of research shows that aggression in childhood is linked with maladjustment and maladaptive outcomes in adolescence and adulthood (Bukowski, Castellanos, Vitaro, & Brendgen, 2016; CDC, 2017; Cleverley et al., 2012; Erenreich et al., 2016; Fite, Colder, Lochman, & Wells, 2008; Hay, 2005; Sharma & Marimuthu, 2014; Undheim & Sund, 2010; Vitaro, & Brendgen, 2016). Yet, only recently have researchers worked to examine how relationships in early childhood are associated with later aggression.

Given that aggression is a relational construct, family and peer influences are

noted in the aggression literature discussing various theories of socialization (Arim et al., 2011; Dodge, Coie, & Lynam, 2006; Laible, Carlo, Davis, & Karahuta, 2016; Laible, Thompson, & Froimson, 2016). It has been argued that close relationships with parents as well as interactions with peers are related to how children interact with others (Dodge et al., 2006; Laible et al., 2016). Hay (2005) posits that ones' relationships with their parents are major determinants in how they interact with peers. Understanding what aspects of these relationships are related to aggression would be useful for interventionists and for parents.



## **SOCIALIZATION AND AGGRESSION**

As a relational process between two or more individuals, aggression is a socially based behavior and can be considered from the following perspectives: attachment, dominance, and social learning. But it is also complex in nature and nurture. Aggression has been described as a goal obtaining behavior. According to Hawley (1999) and Miller (2016), aggression is one way, in addition to prosocial behavior, children obtain status and resources (e.g., toys, friends). From an evolutionary perspective, this is presented as social dominance, which is seen across the lifespan from as early as 15 months to adulthood (Hawley & Geldhof, 2012; Mascaro & Csibra, 2014; Miller, 2016). Therefore, one could think of aggression as having a nature/nurture component with this innate sense of dominance and to obtain resources that can be nurtured to be regulated through socialization (e.g., attachment and modeling).

Relational aggression can be expressed in multiple ways. Miller (2016) suggests that aggression can be a source of self fulfillment such that children react to how others react to them. In other words, if a child is receiving praise and warmth for their behaviors, they react positively and develop a sense of security in their environment, but if children receive rejection and negative reactions for aggressive behaviors, they have developed a sense of hostility or opposition in their environment for themselves (Miller, 2016). This is consistent with Bagwell and Coi (2004) who explain that non-aggressive

friendship dyads experience more reciprocity and positive interaction than aggressive dyads. Additionally, adolescents' views of aggressive behavior are associated with their perpetration of aggressive behaviors in regard to both physical and relational aggression, including the specific components of relational aggression (Goldstein & Tisak, 2010). In other words, if they viewed a behavior such as gossiping as morally wrong or inappropriate, they were less likely to do it, while those who viewed gossiping as acceptable were more likely to do it.

Social learning theorists have suggested that aggression is an imitated behavior such that positive reinforcement, or no reinforcement, could lead to increased aggression by means of imitation (Bandura, 1965; Bandura 1977; Miller, 2016). Indeed, observational learning is noted throughout childhood and adolescence (Miller, 2016). Researchers (Acton, 2003; Fang Li, Stanton, & Dong, 2003) also suggest peer rejection and impulsiveness as possible mechanisms of aggression. Likewise, prosocial tendencies in childhood are linked with positive peer relationships, while aggressive behaviors in childhood are linked to deviant peer relationships (Hay, 2005; Laible et al., 2016).

Finally, attachment is pivotal in social-emotional development. Attachment stems from close relationships with caregivers in early childhood and mutual reciprocity, which in turn is related to how relationships are approached and experienced later in life (Laible et al., 2016; Thompson, 2008). Attachment, thus presents a cascade of trajectories. According to Kochanska and Kim (2012), parents of anger-prone children who were not securely attached used power-asserting discipline techniques, which related to poor

internalization values and self regulation skills and an increase in aggressive behavior, while anger-proneness and power assertion were not related to maladaptive outcomes among children who were securely attached with their parents. The relation between attachment and aggression was also observed across the child-adolescent transition where Arim et al. (2011) found that children's perceptions of parental nurturance at age 10 were negatively associated with aggression at age 12 and 14. The authors hypothesized that anxiety and anger, which can lead to aggressive behavior, can become prevalent when a secure relationship is threatened (Bowlby, 1988).

## **PARENTAL CONTRIBUTIONS TO AGGRESSION**

Parental relationships in early childhood contribute to how one forms later relationships (Babore et al., 2017; Kokkinos, 2013) and it is the quality of relationships within these dyads that is associated with the development of self-competence and social skills, which are known predictors of bullying and aggression (Babore et al., 2017; Chaux et al., 2009; Denham, Mitchell-Copeland, Strandberg, Auerbach, & Blair, 1997; Hay, 2005; Jansen, Veenstra, Ormel, Verhulst, & Reijneveld, 2011; Williford et al., 2016). This association between characteristics of a positive (e.g., warmth, sensitivity) or negative (e.g., irritability, frustration) relationships and aggression has been exemplified in a number of studies (Babore et al., 2017; Becht et al., 2016; Bugental, 2000; Davidov & Grusec, 2006; Eisenberg et al., 2003; Laible et al., 2016).

Maternal sensitivity has been linked with feelings of security, emotional control and regulation, moral reasoning, and engagement (Bugental, 2000; Davidov & Grusec, 2006; Eisenberg et al., 2003; Laible et al., 2016). From an attachment perspective, sensitivity promotes a sense of security within parents and their children and is linked with high engagement in prosocial behavior and low engagement in aggressive behavior (Dodge et al., 2006; Eisenberg et al., 2006; Laible et al., 2016), which suggests parental sensitivity may be related to how children approach relationships with others; including aggressive behavior.

As mentioned earlier, attachment is associated with aggressive behavior (Arim et al., 2011). Further, parents' emotional sensitivity and emotional support is linked with self-reported aggressive behaviors according to Babore et al. (2017) who found that adolescents who perceive their parents as emotionally available report less aggressive engagement than adolescents who perceive parents as less emotionally available. Finally, parental irritability and frustration (i.e., parental overreactivity) was associated with changes in aggression from childhood to adolescence in Bechet et al. (2016), with high parental overreactivity predicting increases in aggression from age 9 to age 15 and low parental overreactivity predicting decreases in aggression from childhood to adolescence. This is consistent with past research findings, which shows that children are more likely to act negatively toward peers if their feelings are dismissed or they receive negative reactions from parents which can result in poor regulation (Davidov & Grusec, 2006; Eisenberg et al., 1999; Fabes, Leonard, Kupanoff, & Martin, 2001).

Hay (2004) points out that relationships with parents affect children's peer relationships and social networks during early childhood. In other words, the relationships preschoolers form with their peers is modeled from the "friendships" they have with their parents. Therefore, relationships with parents may, at least indirectly, be associated with how relationships with peers are approached during middle childhood, adolescence, and adulthood.

## PEER CONTRIBUTIONS TO AGGRESSION

Peer relationships are complex and begin as early as preschool. According to Rubin, Bukowski, and Parker (2006), relationships are multilevel which includes characteristics of an individual, the dyad, and the group (Bukowski et al., 2016). At the dyadic level, children are believed to interact with one another through reinforcement or imitation (Bukowski et al., 2016; Hartup, Glazer, & Charlesworth, 1967). This form of learning serves as a resource for children to understand acceptable and appropriate behaviors with others (Bukowski et al., 2016). Peers are salient contributors to child development across all points of the lifespan (Bukowski et al., 2016; Hay, 2005), serving as agents of socialization in several domains, including aggression (Bukowski et al., 2015). Exploring how peers interact, especially at a dyadic level, is extremely helpful in understanding the development and dynamics of aggressiveness in children and adolescence.

Researchers have noted how salient friends are in the development of aggressive behavior (Brechwald & Prinstein, 2011; Dishon & Tipsord, 2011). Monohan and Booth-Laforce (2015) suggest that there is continuity prevalent regarding maladaptive behaviors, such as aggression, from childhood to adolescence. More recently, Henneberger, Coffman, and Gest (2017) found that having friends that were aggressive was related to the development of aggressive behaviors within 3rd and 5th graders. This

is consistent with Hay (2005) who notes that early childhood interactions with peers could begin the trajectory for later peer interactions. Additionally, Denham and colleagues (2003) note that how children interact with same-age peers during preschool is predictive of well-being and maladjustment outcomes in grade school and adolescence. Bukowski et al. (2015) discuss how friends' behaviors, especially in childhood, are imitations of their peers' behaviors.

Prosocial and aggressive behaviors of toddlers are associated with later aggression and problem behaviors (showing that children interact with peers and show aggressive behaviors as early as age three; Hay, 2005). Howes and Phillipsen (1998) found that children who engage in complex and prosocial play in toddlerhood and preschool were less aggressive toward their peers at age nine, and determined that parental relationships are associated with peer relationships. Hay, Payne, and Chadwick (2004) conducted a review of relationships among peers through childhood. According to the review, toddlers and preschoolers who exhibit prosocial behaviors are more likely to be accepted by their peers than those who are not. In addition, toddlers and preschoolers who are aggressive toward their peers are more likely to be rejected by their peers than those who are not aggressive. Subsequently, those who experience peer rejection in early childhood are more likely to become aggressive later in childhood than those who are not rejected (Hay et al., 2004).

## **GENDER DIFFERENCES IN AGGRESSION**

For years, the aggression literature has included a discussion of gender differences between relational and physical aggression or direct and indirect aggression (Björkqvist, Lagerspetz, & Kaukiainen, 1992; Spieker et al., 2012). The common finding is that boys are more likely than girls to exhibit aggressive behavior. However, a recent study by Babore et al. (2017) found no gender differences in overall aggression, but they did find boys to engage in physical aggression more than girls and girls to engage in hostility more than boys. This is consistent with multiple research findings on relational and physical aggression. Relational aggression is higher among girls than boys, while boys engage more in physical aggression (Bowie, 2007; Lagerspetz et al., 1988; Spieker et al., 2012). For example, in a meta-analysis of 148 studies conducted by Card, Stucky, Sawalani, and Little (2008), boys were reported as being more involved in direct aggression than girls. This is consistent with Björkqvist et al. (1992) who examined multiple cohorts of adolescents and found that girls participated in more indirect, relational forms of aggression than direct behaviors, and boys participated in more direct behaviors than indirect. In general, gender differences in the research appear to be consistent and do not appear to need direct further study. However, it is still important to account and control for gender.



## **DEVELOPMENTAL CHANGES IN AGGRESSIVE BEHAVIOR**

Aggressive behaviors are relatively stable by grade 3, according to Laible, McGinley, Carlo, Augustine, and Murphy (2014), with direct aggression more common during childhood than adolescence (Cleverley et al., 2012). However, Cummings, Iannotti, and Zahn-Waxler (1989) studied children from ages two to five and found that overall aggressiveness was stable. Finally, researchers have been relatively consistent in identifying age trajectories of changes in aggression across adolescence (Becht et al., 2016; Broidy et al., 2003; Cleverly et al., 2012; Williford, Brisson, Bender, Jenson, & Forrest-Bank, 2011) such that early adolescents who are low in aggression show little to no changes by late adolescence, early adolescents who are high in aggression show a marked increase in aggression by late adolescence, and early adolescents who are low in aggression show a decrease in aggression in late adolescence.

## THE CURRENT STUDY

Longitudinal research in this area has been conducted to some extent, as reviewed, however, more work is needed. Further, the use of multi-informant studies are recommended in aggression studies, especially when examining relational aggression because relational aggression is harder to identify than physical aggression (Bowie, 2007; Cleverly et al., 2012; Crick & Grotpeter, 1995). Thus, using only a teacher or parent report, from whom aggressive behaviors are often hidden, may not be an accurate measure. However, the use of self-report data still presents some risk of dishonesty. Therefore, it is recommended to use measures from multi-informants when studying aggression (Bowie, 2007; Cleverly et al., 2012; Crick & Gotpeter, 1995). The main aim of this study is to examine how interactions with parents and relationships with peers in early childhood are longitudinally associated with aggression during grade school. Age 4 is an adequate age to assess for predictors of aggressive behaviors, as social competence in preschool is linked to preschool-age and kindergarten-age aggressive behaviors (Camodeca et al., 2015). It is also important to examine how aggression changes from grade 3 to grade 6 because, as mentioned, bullying increases across school transition (e.g., from grade 5 to 6) and usually peaks in middle school. Knowing what predictors influence a change would be helpful in future intervention designs and prevention efforts because knowing characteristics that could be considered

warning signs would imply intervening at an earlier time point than elementary and middle school. This thesis aims to contribute to this gap in the research using National Institute of Child Health and Human Development's Survey of Early Child Care and Youth Development (NICHD SECCYD) data to longitudinally assess early childhood experiences (age 4) and how they associate with aggressive behaviors initially and at later times in grade school. Based on the gaps in the literature and the need for more research, this master's thesis posits the following research questions:

1. 1) Does frequency of aggression change across grades 3-6 in the study sample?
2. 2) How are relationships with parents and relationships with friends in early childhood associated with relational and general aggression, both initially in third grade and across time?

Based on my review of the literature, it is difficult to draw hypotheses about changes in aggression. When considering agreed trajectories of aggression outlined by Becht et al. (2016), Broidy et al. (2003), Cleverly et al. (2012), Williford, Brisson, Bender, Jenson, & Forrest-Bank (2011), it will depend on the baseline levels of aggression in my sample. If the baseline means at grade 3 are low, then I will expect little to no changes, or decreases in aggression. If baseline means are high at grade 3, then I will expect increases in aggression. I do not think this would be different between general and relational aggression. Regarding relationships with parents and friends, I think I will find a linear relationship between early childhood relationships and aggression in grade school such that characteristics of a negative relationship (i.e., maternal conflict, negative friendship

interactions, and aggressive behavior at 54 months) will negatively predict initial aggression and subsequent increases in aggression. In contrast, I expect that characteristics of a positive relationship (i.e., maternal sensitivity, maternal closeness, positive friendship interaction, and prosocial behaviors at 54 months) will positively predict initial aggression and subsequent decreases in aggression.

## **METHOD**

### **Data and Procedures**

The research questions were tested by utilizing the restricted NICHD SECCYD Data (Laible et al., 2016), Phases II and III. The data include a sample of families located in various areas of the United States who were recruited when the target child in the family was one month old. Data were collected by trained research assistants starting in 1991 (Phase I). Follow-ups during Phase I were conducted via telephone every three months. In-person assessments consisting of questionnaires and/or observations of the child, parents, and home, childcare, and school environments were also made at months 1, 6, 15, 24, and 36. Phase II telephone interviews began at 54 months, with follow-ups every four months. In-person assessments for Phase II were conducted at 54 months, kindergarten, and first grade. Finally, Phase III telephone interviews began at second grade with a six-month follow-up, while in-person assessments were conducted annually from second grade to sixth grade. There was a total of 10 data collection sites. The locations of these sites were Arizona, Irvine, Kansas, Massachusetts, Philadelphia, Virginia, North Carolina, Washington, and Wisconsin. In-person data collection occurred either in the child's home, child care facility, school, or in a laboratory playroom. In the current study, missing data are accounted for using Full Information

Maximum Likelihood (FIML), which infers missing information based on correlations and distributions according to the variables included in the model (Little, 2013).

## **Participants**

Study participants ( $N = 1,364$ ; 52.4% Female) are examined at age 4 (NICHD Phase I) and later at grades 3, 5, and 6 (NICHD Phase III) and are the same across all four-time points based on an ID number, which remained consistent for the entire study, regardless of attrition. Although nationally recruited, the sample is only mildly diverse in race/ethnicity, with the majority consisting of Caucasians (85.4%), followed by Blacks (9.3%), Hispanics (4.2%), Asians (1%) and Unknowns (0.1%). The NICHD SECCYD participants middle class. Participant's parents varied in income at baseline from less than \$10,000 annually to more than 40,000 annually.

## **Measures**

### ***Parental Conflict and Closeness***

The Parent Child Relationship Scale (PCRS; Pianta, 1992) is a parent-report measure used to examine level of warmth parents feel toward their child. The 30-item questionnaire uses 5-point Likert scale to collect responses. The current study uses two distinct subscales at 54 months, maternal closeness (8 items; Cronbach's alpha = .84) and maternal conflict (7 items; Cronbach's alpha = .84), according to Driscoll and Pianta (2011) who also used these data. Maternal closeness measures how close parents feel toward their children. One item used in the measure was "I share an affectionate, warm relationship with my child." Maternal conflict measures how often conflict is present in

the mother-child dyad. A sample item used in the measure was “My child easily becomes angry at me.”

### ***Parental Sensitivity***

Maternal sensitivity was coded in the Parent-Child Interaction Task (Mother Version; Pianta & Egeland, 1990) by trained research assistants on a 7-point scale from a semi-structured 15-minute video observation when the child was 54 months old, and was adapted from Egeland and Hiester’s (1993) teaching task rating scales, according to Cooper-Vince, Pincus, and Comer (2014). Two tasks that were difficult for the child to complete were given in order to foster parental instruction and assistance. A third activity was given to encourage play between the mother and the child. The first activity involved completion of a maze with an Etch-A-Sketch (a maze was attached to the screen). Next, a task was given for the child to build towers of the same size using rectangular cubes of different shapes. Finally, six hand puppets (2 parrots, two frogs, and 2 blue alligators) were given for the mother and child to play with. The composite variable for maternal sensitivity (Cronbach’s alpha = .82) was created from the sum of three codes from the video observation (supportive presence, respect for autonomy, and hostility). For all three codes, higher scores represent higher presence, autonomy, or hostility. In creating the composite sensitivity variable, hostility was reverse coded; higher numbers represent higher sensitivity.

### ***Peer Interactions***

The method of the NICHD SECCYD Friendship Interaction Coding variables are described in detail by McElwain, Booth-Laforce, and Wu (2011). At 54 months, children

were observed interacting with a close friend, who was within 18 months of the study child, in a semi-structured play session. The setting of this observation took place in either the child's home or child-care location. All friendship dyad's play sessions took place in a portable playroom (e.g., a 3 foot high x 5 foot diameter cardboard with an open top). Experimenters were briefly introduced to the children in the play area before presenting children with three toys in the following order: 1) A Mikey Mouse pop-up game; 2) A Viewmaster with one slide; 3) A Fisher-Price doctor kit and doll. Each toy was given to the children to play with for a five minute session, one at a time. The interaction was videotaped and coded by trained research assistants. The current study utilizes the following composite variables from the observations: Prosocial behavior, contribution to positive interaction, contribution to negative interaction, and aggressive behavior. The coding scheme was developed specifically for the NICHD SECCYD. Each behavior was rated on a 5-point Likert scale with 1 meaning *low* and 5 meaning *high*. However, because so few children were rated 4 or 5 on aggressiveness or contribution to negative interaction, NICHD recoded these variables into a 3-point scale; this means that a score of 4 or 5 was recoded to 3. Inter-rater reliability was  $>.70$  for all variables (McElwain et al. (2011). Coders made these ratings at the end of each of the three toy sessions. The final composite scores were the average rating from the three sessions.

### ***Maternal and Teacher Reports of Aggression***

The Child Behavior with Peers (Ladd & Profilet, 1996) was utilized in assessing parent's report of aggression in grades 3 through 6. Crick (1996) adapted this measure



for teacher report. Both were used in this study. We used this measure to examine general aggression and relational aggression. Adequate reliability (Cronbach's alphas  $> .80$ ) and validity has been demonstrated (Ladd & Profilet, 1996; Laible et al., 2013). General aggression was scored by computing mean scores of 9 items from the Child Behavior with Peers measure. Sample items include "tends to react to other children's distress by teasing them or making things worse," "taunts or teases other children," or "threatens other children." The Child Behavior with Peers measure also included 6 items examining relational aggression. Sample items included "when angry at a peer tries to get other children to stop playing with that child" or "threatens to stop being someone's friend in order to hurt that child or to get what is wanted from that child."

### ***Self-Report Aggressive Behavior***

Engagement in aggression was measured at 3-time points, 3rd grade, 5th grade, and 6th grade. Developed as a measure of bullying, four items on a 5-point Likert scale (1 = *Never* and 5 = *Always*) were reported by the child (Henrich & Shahar, 2014; Kochenderfer & Ladd, 1996). Because of recent work by Volk, Veenstra, and Espelage (2017), I deemed the items better suited for measuring aggression instead of bullying. The items were first presented with the prompt "Do you:" with four subsequent statements for them to rate. According to Henrich and Shahar (2014), who used these data, the subsequent statements were as followed: "Pick on other kids in your class at school?;" "Say mean things to other kids in your class at school?;" "Say bad things about other kids in your class at school?;" "Hit other kids in your class at school?" Reliability was adequate at 3rd grade (Cronbach's Alpha = .77), 5th grade (Cronbach's Alpha = .78),

and 6th grade (Cronbach's Alpha = .83). For the current study, I also test for relational aggression (i.e., say mean things, say bad things, and pick on kids; Cronbach's alpha = .74 at 3rd grade; Cronbach's alpha = .79 at 5th grade; Cronbach's alpha = .84 at 6th Grade).

## ANALYTICAL APPROACH

The first research question was tested using repeated measures ANOVAs, one for each informant, with polynomial contrasts. To test the second and main research question, I ran three separate structural equation models, based on the outcome measures ( $N = 1,364$ ): 1) Maternal reports of aggression; 2) Teacher reports of aggression; 3) Self-reports of aggression. This multi-informant approach allows a holistic view of my questions. Because both the maternal and teacher reports are derived from the same measure (Crick 1996; Ladd & Profilet, 1996), I conducted a confirmatory factor analysis, comparing the maternal and teacher reports of the child behavior with peers' aggression subscales to see if the two informants should be tested in the same or different models. This was conducted by examining chi-squared difference and model fit indices at grade 3 for the maternal and teacher reports of aggression, with all items entered individually with no subscale structure entered and no specification of rater specified, as a one-factor model. The CFA showed poor fit ( $\chi^2(151) = 3,088.60, p < .05$ ; RMSEA = .138; CFI = .599; TLI = .593; SRMR = .158), suggesting that the maternal and teacher informants differ in variability and may produce differing results. Therefore, I tested the teacher report and maternal reports separately.

To answer the research questions, three models were run in MPlus version 6. The central part of the models involves modeling the repeated measures of our outcomes

(general and relational aggression). The paths that connect the repeated measurements are known as autoregressive paths. Thus, the models allow for the prediction of both initial aggression levels in 3<sup>rd</sup> grade and subsequent changes in aggressive behavior from year to year. Notably, for maternal and teacher-reports, data from grades third through sixth were available, but for the self-reported instruments, grade 4 data were not collected. General and relational aggression were run in the same models (but separate models by reporter) and were allowed to correlate with one another within time. Our predictors of interest included: maternal sensitivity, maternal conflict, maternal closeness, prosocial behavior, aggression, positive interaction, and negative interaction, and I also controlled for gender in the models. Predictors were allowed to correlate with one another.

## RESULTS

### *Preliminary Analysis*

A number of preliminary analyses were conducted before testing the main research question. Table 2 reports descriptive statistics for the dependent measures. As noted in the table, mean scores were relatively low along the scales' range of measurement for each outcome variable. This prompted me to check my data for skewness. Exploratory data analyses were conducted to examine to what extent the data were skewed and to check for outliers. Kolmogorov-Smirnov tests revealed that the data were non-normal ( $p < .001$ ). Since the research question is tested in MPlus, a structural equation modeling software, Maximum Likelihood with Robust Standard Errors (MLR) estimations are used, which accounts for non-normal data better than maximum likelihood estimation (Hu & Bentler 1999; Kline, 2005; Villancourt, Brittain, McDougall, & Duku, 2013).

Preliminary analyses also show that some predictor variables were in some instances correlated with one another, while some were not (Table 1). For example, maternal sensitivity was negatively correlated with maternal conflict and negative interactions with friends, but positively with maternal closeness and positive interactions with friends. Maternal closeness was also negatively correlated with maternal conflict. Interestingly, there were no other significant correlations yielded for the measures of

maternal relationships. Surprisingly, positive and negative interactions were not significantly correlated with one another. Finally, prosocial behaviors with friends were positively correlated with positive interactions with friends, negatively with negative interactions with friends, and negatively with aggressive behaviors toward friends.

I also examined correlations among my outcome variables of general and relational aggression across all informants (i.e., maternal, teacher and, self) and time (i.e., grades 3-6). Table 2 reports these correlations. Maternal reports of aggression were often inter-correlated with one another at the different time points. In addition, maternal reports appear to be correlated with self-reports of aggression at times. Teacher reports were not often correlated with other informants nor were teacher reports inter-correlated across time. This could be because each time point was reported by a different teacher.

### ***Tests of Changes in Aggression Across Time***

I was also interested in seeing if aggression across time was changing at a statistically significant level as my first research question. Repeated measures analysis of variance (ANOVA) tests with polynomial contrasts were conducted to test the first research question.

According to Table 2, I observe that the mean of maternal reports general aggression decreases from grade 3 to grade 4 and then increases through grades 5 and 6. The repeated measures ANOVA indicated that this change is significant ( $F(3, 2,751) = 12.53; p < .001$ ). Specifically, within-subjects contrasts reveal that the decrease from grade 3 to grade 4 was statistically significant ( $F(1, 917) = 26.43; p < .001$ ), but not the increase from grade 4 to grade 5 ( $F(1, 917) = 1.10; p > .05$ ). In contrast, the mean

increase from grade 5 to grade 6 for maternal reports of aggression was statistically significant ( $F(1, 917) = 13.32; p < .001$ ). Similarly, mean levels of maternal reports of relational aggression decreased from grade 3 to grade 4 and then increased through grade 5 to grade 6. Although the overall repeated measures ANOVA was significant ( $F(3, 2,742) = 4.25; p < .01$ ), only the increase in means from grade 5 to grade 6 were statistically significant ( $F(1, 914) = 11.63; p < .00$ ).

Although teacher reports of general aggression decreased from grade 3 to grade 4, and increased from grade 4 to grade 5, and a decrease from grade 5 to grade 6. However, these changes were not statistically significant ( $F(3, 2,088) = .59; p > .05$ ). In contrast, some mean level changes in teacher reports of relational aggression were statistically significant. Similar to teacher reports of general aggression, relational aggression numerically changed (Table 2) with a decrease from grade 3 to grade 4, and increase from grade 4 to grade 5, and a decrease from grade 5 to grade 6. Contrary to teacher reports of general aggression, the overall repeated-measures ANOVA for teacher reports of relational aggression was significant ( $F(3, 2,010) = 3.26; p < .05$ ). However, with-in subject contrasts show that this was only the case for the mean decrease from grade 3 to grade 4 ( $F(1, 670) = 4.51; p < .05$ ).

Repeated measures ANOVA results for both self-reports of general and relational aggression were similar to one another. Specifically, numerical increases were observed from grade 3 to grade 5 to grade 6 (Table 2). These mean changes were shown to be statistically significant overall ( $F(2, 1,782) = 42.96; p < .001; F(2, 1,976) = 36.80; p < .001$ ). Within-subject contrast also showed statistical significance from grade 3 to grade

5 ( $F(1, 892) = 24.10; p < .001; F(1, 988) = 21.37; p < .001$ ) and from grade 5 to grade 6 for both self-reports of general and relational aggression, respectively ( $F(1, 892) = 23.27; p < .001; F(1, 988) = 17.26; p < .001$ ).

### ***Model Predicting Maternal Reports of Aggression***

The second, and main, research question was to examine early childhood predictors of aggression in grade school. I used structural equation modeling to answer this question (See analytical approach section). The first model tested was the model examining maternal reports of aggression. Compared to the teacher and self-report models, the maternal report model yielded the most significant findings. Model fit was very good ( $N = 1,364$ .  $\chi^2(6) = 24.395, p < .001$ ; RMSEA = .047, 90% CI [.029, .068]; CFI = .996; TLI = .937; SRMR = .007). Table 3 summarizes the findings of the maternal report model. Stability coefficients in the model were significant at each grade, suggesting that maternal reports general aggression and relational aggression was consistent and quite stable across grades 3-6. The covariate, gender, also yielded significant findings. General aggression was found to be more common among males than females. In addition, females were more likely to be relationally aggressive than males. Since these are in reference to maternal reports of aggression, this suggests that mothers are rating males as more aggressive in general than females, but females as more relationally aggressive than males. These findings are in line with what is typically found in the literature.

**General Aggression** Aggression at grade 3 was significantly predicted by relationships with parents and relationships with friends at age 4. Specifically, maternal



sensitivity and maternal closeness were negatively associated with general aggression at third grade, while maternal conflict was positively associated with general aggression at third grade, indicating that the more sensitive or close a parent was rated with their child, the less aggression that was observed at third grade. This is consistent with my hypothesis. For friendships at age 4, only negative friendship interactions significantly predicted general aggression at grade 3, with a positive association, meaning that as friends were rated as negative contributors to a play session with their friends at 54 months, the more they were rated as aggressive by their mothers at rated 4. Neither positive friendship interactions, prosocial behaviors with friends, nor aggressive behaviors with friends at age 4 significantly predicted general aggression at grade 3.

By controlling for general aggression at grade 3 when examining grade 4 general aggression, I can examine predictors of changes in aggression across the studied points in time. However, neither relationships with parents nor relationships with friends were predictive of changes in aggression from grade 3 to grade 4. Relationships with parents at age 4 were not significantly predictive of changes in aggression from grade 4 to grade 5. This, however, was not the case for relationships with friends. Positive interactions with friends at age 4 predicted a decrease in aggression from grade 4 to grade 5. Aggressive behaviors with friends at age 4 only slightly predicted a decrease in general aggression at grade 5, although this association was only marginally significant. Negative friendship interactions and prosocial behaviors with friends at age 4 were not predictive of general aggression at grade 5 (controlling for the earlier time points and covariates). Regarding general aggression at grade 6, maternal conflict at age 4 predicted the increase in general

aggression from grade 5 to grade 6 and maternal sensitivity at age 4 predicted a decrease in general aggression at grade 6. The latter relation, however, was only marginally significant.

**Relational Aggression** Relational aggression at grade 3 was also significantly predicted by relationships with parents and relationships with friends at age 4 (the rightmost part of Table 1). Specifically, maternal sensitivity was negatively associated with general aggression at third grade, while maternal conflict was positively associated with general aggression at third grade. In contrast, none of the variables measuring relationships with friends were significantly associated with relational aggression at grade 3. It should be noted that these relations were strongest for maternal conflict.

As with general aggression, I controlled for relational aggression at grade 3 when examining grade 4 relational aggression. Only the relation between aggressive behaviors with friends at age 4 was significantly associated with change in relational aggression from grade 3 to grade 4, predicting a decrease in behavior. Finally, I controlled for relational aggression in grades 3-5 when examining relational aggression at grade 6 and found no significant change in relational aggression from grade 5 to grade 6. However, maternal sensitivity at age 4 predicted a decrease in relational aggression from grade 5 to grade 6, while maternal conflict predicted an increase in relational aggression at grade 6. Relationships with friends at age 4 also significantly predicted changes in relational aggression from grade 5 to grade 6. Specially, positive interactions with friends and relationally aggressive behaviors with friends predicted an increase in changes in aggression from grade 5 to grade 6 in relational aggression while negative friendship

interactions and prosocial behaviors with friends predicted a decrease in relational aggression from grade 5 to grade 6.

### ***Model Predicting Teacher Reports of Aggression***

Model fit was outstanding for teacher reports of aggression (See Table 4;  $N = 1,364$ .  $\chi^2(6) = 5.520$ ,  $p > .05$ ; RMSEA = .000, 90% CI [0, .034]; CFI = 1.00; TLI = 1.004; SRMR = .010). However, few significant findings were observed. It is important to note that none of the stability coefficients were significant in the teacher report model. This suggests that aggression ratings of the child were not correlated across the years when rated by different teachers every year. Negative interactions with friends did negatively predict general aggression at grade 3, however this association was only marginally significant. In addition, prosocial behaviors with friends predicted an increase in aggression from grade 4 to grade 5, but this association was also only marginally significant. This was also the case for relational aggression. No significant changes were observed across grades 3 -6 in relational aggression when different teachers report on the same child each year, with the exception of maternal closeness predicting an increase in relational aggression from grade 4 to grade 5.

### ***Model Predicting Self-Reports of Aggression***

The model predicting self-reports of aggression demonstrated outstanding fit (See Table 5;  $N = 1,364$ .  $\chi^2(2) = 1.809$ ,  $p > .05$ ; RMSEA = .000, 90% CI [0, .052]; CFI = 1.00; TLI = 1.015; SRMR = .004), but there were no significant findings predicting aggression in grade 3 or changes in aggression across grades 3, 5, and 6, with the exception of a marginally significant increase in general aggression from grade 3 to grade

5. However, the standardized beta weight for this relationship was high. Many researchers (e.g., Kenny, 2015; Petraitis, Dunham, & Niewiarowski, 1996), suggests that this is due to multi-collinearity, however this did not appear to be the case (See Table 2).

## DISCUSSION

This thesis worked to examine how early childhood relationships, specifically with parents and friends, are predictive of general and relational aggression in third grade and changes in general and relational aggression up to sixth grade. Multiple theoretical and empirical studies have argued close relationships in early childhood are indicative of later relationships (Dodge et al., 2006; Hay, 2005; Laible et al., 2006). Although there is a plethora of research examining how parental and peer relationships are related to aggression, researchers have merely scratched the surface of longitudinal questions that directly examine relations between early childhood relationships and later aggression. The questions explored in this thesis aimed to fill this gap in the research, however, the results yield recommendations for additional research and conclusions that early relationships may not necessarily be uniquely indicative of later aggression. I chose to follow the recommendation of researchers such as Bowie (2007), Cleverly et al. (2012), and Crick and Gotpeter (1995) to use multi-informant measures of aggression. Therefore, it is important to consider findings and non-findings across informants in the current study.

The teacher (Table 4) and the self-report (Table 5) models revealed little to no significant findings, which was not consistent with hypotheses. Aggression was also not rated stable across time. The maternal report (Table 3) model, however, was in part

consistent with my hypothesis that there would be a linear relationship between early childhood relationships and aggression. It is important to note that maternal reports aggression were stable in grades 3-6, which is consistent with past research (Laible et al., 2014). Mothers being sensitive and closeness and showing a positive interaction with friends at age 4 were related to lower levels of aggression at third grade. In contrast, having conflict with maternal caregivers and negative interactions with friends at age 4 was related to higher levels of aggressive behavior at third grade. However, few changes in aggression over time were observed and were not always consistent with my hypothesis. For example, indeed, aggressive behaviors with friends at age 4 were related to increased aggression from fifth grade to sixth grade, negative interactions with friends were related to decreases in aggression from fifth grade to sixth grade. Finally, a significant decrease in relational aggression from fifth grade to sixth grade was predicted by prosocial behaviors with friends at age 5.

## CONSIDERING FINDINGS ACROSS INFORMANTS

Cross-informant information is useful in examining observable behaviors, such as aggression, and adds to construct validity in a study (De Los Reyes et al., 2015). The discrepancies between informants in this thesis were surprising. However, there is empirical evidence to help explain why they are reported. Cleverly et al. (2012) points out that aggressive behavior is often kept secret from teachers and that self-reports are essential in measuring aggressive behavior. However, the use of self-report measures of maladaptive behaviors has a risk of capturing dishonest results. Further, there is empirical evidence, as cited by Cleverly et al. (2012) that there is little to no relation between parental and self-reports of aggressive behaviors (Achenbach, McConaughy, & Howell, 1987; Angold et al., 1987; Bird, Gould, & Staghezza, 1992). With this in mind, the fact that the maternal report model yielded a plethora of significant findings in comparison to the teacher and self-report models, forces me to consider single-rater bias. This is why it is recommended to test aggression across multiple informants. Perhaps maternal caregivers are more critical about aggressive behaviors to their children. In addition, it is important to note the possibility that the maternal report is capturing normative aggression. Since the study sample is characteristically low in aggression (See Table 2), it makes sense that some changes in aggression are related to typical development (e.g., obtaining a goal).

## **NORMATIVE AGGRESSION DURING CHILDHOOD AND ADOLESCENCE**

Conflict during toddlerhood with others is normative, but at low rates (Hay, 1984; Loeber, Hay, 1997; Shantz, 1987). It is normal for children and adolescents to portray at least some aggressive behaviors. However, it is considered maladaptive if this behavior becomes a pattern or exhibits often (Zahrt & Melzer-Lange, 2011). Given that only the maternal report yielded significant findings, it is possible that it is capturing normative levels of aggression not noticed by teachers or self-reported. In other words, perhaps the significant findings after initial aggression are spurious or are due to typical developmental changes in aggression. Even when looking at the mean aggression levels from the maternal reports (see Table 1), you can see that they are relatively low along the 0-3 scale.

Further, there could also be goal-oriented reasons for aggression, also known as instrumental aggression (Hartup, 1979). Hawley (2003) discusses the use of power to gain social status through dominance, especially at the transition to middle school. The time frame in the current study is consistent with Cleverly et al. (2012). This has been discussed extensively in the context of bullying, which requires an imbalance of power (Álvarez-García, García, Núñez, 2015; Volk et al., 2017). Although we do not examine dominance and power in the current study, it is important to keep such reasons in mind for discussion purposes. It is possible that maternal caregivers were observing goal



attainment when aggressive behavior was reported. This could possibly explain why I am seeing inconsistent, at times small, levels and little changes in aggression. Keep in mind that aggression is relatively stable in children (Laible et al., 2014). This is observed in the stability coefficients of Table 1. Thus, the maternal report suggests that maternal reports are predictive of initial aggression, but not much change in aggression. It could be that aggression can be predicted by early childhood relationships, but any changes may be due to something else in the context of the sample. For example, it could be that observing an increase in aggressive behaviors from fifth grade to sixth grade, as predicted by maternal conflict in early childhood, is due to a goal-oriented situation, such as reaching a social status when entering middle school. This framework is consistent with Developmental Cascades Theory (Masten & Cicchetti, 2010) which suggests accumulation of multiple environmental and contextual factors contribute to various developmental outcomes (Mize & Kliewer, 2017). Therefore, it is possible that there are other important factors to consider. For example, I report significant increases and decreases in maternal reports of general and relational aggression from fifth grade to sixth grade, but I do not report many significant changes from third grade to fourth grade or from fourth grade to fifth grade. Perhaps the stressors of school transition are one of many cascading factors that are contributing to this finding. Maybe the accumulation of stress that is associated with school transitions, including changes in social status (Eccles et al., 1993; Kingery, Erdley, & Marshall, 2011; Mize & Kliewer, 2017) is responsible for this finding. In addition, it could be that changes in social status are occurring, such

as trying to reach the goal of being high in a social hierarchy, is why I see increases in maternal reports of aggression from fifth to sixth grade in some cases.

## **LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH**

Research is rarely without limitations; this thesis is no exception. First, the structural equation models examined in this thesis only yield correlational results, not causal. Although my thesis adds to the literature by using a multi-informant approach to test direct longitudinal associations between early childhood relationships and aggression during grade school, it is important to note that I did not control for the demographics of race and income. This was for statistical and methodological reasons. When I attempted to include them in the models, model fit indices no longer demonstrated model fit when race and income were included as a sole covariate or with other covariates.

As discussed as a multi-informant limitation, I have to consider the possibility that study participants did not accurately report on themselves in the self-report measure of aggression. Although the multi-informant approach is recommended for aggression literature, I have to keep in mind the limitations that accompany such an approach. Additionally, maternal caregivers and teachers may not necessarily be the best reporters of children engaging in aggressive behaviors toward peers. The teacher report model, for example, utilized a different informant each year. Further, it would have been helpful to know which teacher of the student filled out the form because some teachers interact with children for different amounts of time. Therefore, that could explain why aggression was not found stable across time and why changes were not observed.

The self-report model was extremely limited. In addition to the limitations that come with using self-report data (see Considering Findings Across Informants section), my data showed very low levels of aggression, compared to the other models. This resulted in a floor-effect in the self-report model such that many participants had a mean of 1 (the lowest possible score) in self-reports of aggression. In hindsight, I should have perhaps conducted a Poisson's regression analysis to examine the relation between early childhood relationships and self-reports of aggression, given the skewed nature of aggression, with most people not being very aggressive.

Finally, The NICHD SECCYD study was not designed to examine aggression. Therefore, this thesis was limited to the measures of aggression used in the survey. In addition, the study sample is dated. There could have been cultural shifts since that data were collected that would have changed the results of the study.

## CONCLUSION

In conclusion, I think the maternal model is the most reliable model to consider, but I still keep in mind findings from the teacher and self-report model. Noting that only the maternal report yielded significant results and appear biased to maternal relationships, I think that maternal relationships in early childhood are to an extent associated with normative aggressive behaviors in grade school. However, given that changes were not observed in the model and aggression is known to be stable at the point in time studied (Laible et al., 2014), I think intervention and prevention efforts would need to be focused earlier than third grade. The results in the current study support this, as I was able to predict initial aggression better than change from third grade through sixth grade. Finally, although the maternal report yields significant findings, I think that the raw aggression scores (see mean scores in Table 1) should be considered in addition to the lack of findings in the teacher and self-report models.

## APPENDIX OF TABLES AND FIGURES

Table 1. Zero Order Correlations, Means, and Standard Deviations of Predictors

	Male	MatSens	MatConf	MatClose	FrPosInt	FrNegInt	FrProsc	FrAggr
Male	-	-.006	-.011	-.046	-.008	.008	-.095**	.052
MatSens		-	-.150***	.180***	.075*	-.100**	.053	-.062
MatConf			-	-.318**	.000	.045	.001	.014
MatClose				-	.014	-.031	.015	-.090*
FrPosInt					-	-.056	.059***	-.148**
FrNegInt						-	-.358***	.520***
FrProsc							-	-.252***
FrAggr								-
<i>M (SD)</i>	.51 (.50)	16.96 (2.90)	27.35 (7.63)	50.04 (3.67)	2.87 (.68)	1.44 (.51)	2.83 (.53)	1.10 (.25)

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

Note.  $N = 1,364$ . Gender is coded as 0 = Female and 1 = Male.

Table 2. Zero Order Correlations, Means, and Standard Deviations of Outcomes.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1.G3GenAggMAT	-	.050	.248***	.554***	.021	.031	.701***	.002	.466***	.008	.665***	.051	.166***	.424***	.025	.010	.685***	-.082*	.136***	.426***	-.061	.001
2.G3GenAggTCH		-	.011	.033	.657***	-.052	.036	.075*	.010	.031	.042	-.040	.039	.025	.025	-.077*	.047	-.040	.094*	.014	-.054	-.023
3.G3GenAggSR			-	.151***	.001	.020	.173***	-.043	.158***	-.023	.149***	.019	.357***	.112**	.010	-.043	.216***	.065	.284***	.141***	.037	.034
4.G3RelAggMAT				-	-.036	.048	.445***	-.027	.650***	-.008	.419***	.040	.081*	.596***	.038	-.005	.402***	-.022	.079*	.571***	-.004	-.008
5.G3RelAggTCH					-	-.024	-.004	.040	-.047	.091**	.015	-.007	.043	-.026	.013	-.037	.002	.065	.023	-.048	-.041	.005
6.G3RelAggSR						-	.003	-.022	.037	-.018	.043	.076*	.049	.115**	.068	.089**	.034	-.023	.041	.047	-.029	-.021
7.G4GenAggMAT							-	.005	.559***	-.001	.688***	.008	.165***	.432***	.003	-.007	.680***	-.035	.172***	.436***	-.005	.027
8.G4GenAggTCH								-	.058	.616***	-.021	.008	-.097*	.010	.026	.050	.006	.035	-.081*	.002	.024	.012
9.G4RelAggMAT									-	.064	.477***	.028	.118***	.644***	.019	.006	.435***	-.062	.134***	.690***	-.007	.004
10.G4RelAggTCH										-	-.002	-.005	-.024	.043	-.036	.023	-.025	-.001	-.052	.008	.021	-.040
11.G5GenAggMat											-	.004	.221***	.549***	-.019	.030	.710***	-.085*	.236***	.478***	-.048	.032
12.G5GenAggTCH												-	-.033	.049	.671***	-.019	.022	-.013	-.063	.063	-.023	.002
13.G5GenAggSR													-	.110**	-.037	-.021	.189***	-.033	.515***	.110**	-.013	-.040
14.G5RelAggMAT														-	.034	.026	.443***	-.060	.155***	.660***	-.011	.031
15.G5RelAggTCH															-	-.008	.035	.009	-.020	.051	.002	-.022
16.G5RelAggSr																-	-.001	-.042	.010	-.014	-.058	.000
17.G6GenAggMAT																	-	-.023	.229***	.551***	-.006	-.023
18.G6GenAggTCH																		-	.015	-.048	.679***	-.041
19.G6GenAggSR																			-	.163***	.013	-.012
20.G6RelAggMAT																				-	-.027	.001
21.G6RelAggTCH																					-	-.066
22.G6RelAggSR																						-
Means (SD)	29 (.27)	33 (.43)	1.21 (.42)	.29 (.31)	35 (.42)	1.24 (.51)	.25 (.27)	.31 (.43)	.27 (.31)	32 (.41)	.26 (.27)	.33 (.44)	1.29 (.45)	.27 (.30)	.34 (.42)	1.34 (.52)	.28 (.29)	.30 (.42)	1.37 (.51)	.30 (.33)	.28 (.38)	1.44 (.58)

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

Note.  $N = 1,364$ .

Table 3. *Summary of Maternal Report Model*

	General Aggression				Relational Aggression			
	Third	Fourth	Fifth	Sixth	Third	Fourth	Fifth	Sixth
Prior Score	--	.827***	.895***	.836***	--	.861***	.869***	.853***
Male	.105***	.053*	.017	-.013	-.113***	.023	-.021	-.048 <sup>†</sup>
Maternal Sensitivity	-.095*	-.047	-.030	-.055 <sup>+</sup>	-.110**	-.009	.007	-.090**
Maternal Conflict	.293***	.031	.007	.060*	.223***	.042	-.017	.065*
Maternal Closeness	-.098*	.049	-.032	.061	.001	-.040	.029	-.016
Positive Friendship Interaction	-.042	.030	-.075*	.016	-.016	-.001	-.064	.091*
Negative Friendship Interaction	.107*	-.025	.071	-.094**	.006	.006	.042	-.084*
Prosocial with Friends	.026	.000	.023	-.068 <sup>+</sup>	.038	.022	.042	-.083*
Aggressive with Friends	.020	.043	-.062 <sup>+</sup>	.075*	.050	-.083*	-.015	.091*

\* $p < .05$ ; \*\*  $p < .01$ ; \*\*\* $p < .001$ ; <sup>†</sup>*marginally significant*

Note. Standardized beta weights from the paths predicting maternal reports aggression at grades 3-6. Stability coefficients across time are reported. The model also controls for gender (Male = 1).  $N = 1,364$ .  $\chi^2(6) = 24.395, p < .001$ ; RMSEA = .047, 90% CI [.029, .068]; CFI = .996; TLI = .937; SRMR = .007.



Table 4. *Summary of Teacher Report Model*

	General Aggression				Relational Aggression			
	Third	Fourth	Fifth	Sixth	Third	Fourth	Fifth	Sixth
Prior Score	--	.005	.057	.004	--	.055	.042	-.029
Male	.009	.006	.026	.029	-.010	.006	.034	.045
Maternal Sensitivity	-.005	.004	.015	-.064	-.022	.028	.034	-.074
Maternal Conflict	.002	-.003	-.033	-.017	-.009	-.047	.034	-.016
Maternal Closeness	.014	-.002	-.011	.042	-.016	-.020	.080*	.033
Positive Friendship Interaction	.047	.026	-.014	-.016	.036	.042	-.020	.041
Negative Friendship Interaction	-.094 <sup>†</sup>	-.064	.004	-.028	.000	-.077	-.063	-.095
Prosocial with Friends	-.068	.034	.112 <sup>†</sup>	-.070	-.019	.042	-.031	-.068
Aggressive with Friends	.012	-.017	.056	.058	-.048	-.010	.087	.058

\* $p < .05$ ; <sup>†</sup>*marginally significant*

Note. Standardized beta weights from the paths predicting teacher reports aggression at grades 3-6. Stability coefficients across time are reported. The model also controls for gender (Male = 1).  $N = 1,364$ .  $X^2(6) = 5.520, p > .05$ ; RMSEA = .000, 90% CI [0, .034]; CFI = 1.00; TLI = 1.004; SRMR = .010.

Table 5. *Summary of Self-Report Model*

	General Aggression			Relational Aggression		
	Third	Fifth	Sixth	Third	Fifth	Sixth
Prior Score	--	1.842 <sup>†</sup>	.800	--	-.816	-2.024
Male	.039	-.007	-.031	-.043	-.045	.047
Maternal Sensitivity	-.006	-.043	.033	-.043	-.060	.033
Maternal Conflict	.060	-.045	.068	.017	.037	.109
Maternal Closeness	-.056	.038	.033	-.015	-.012	.011
Positive Friendship Interaction	.027	.008	-.069	.024	-.002	-.100
Negative Friendship Interaction	.064	-.105	.028	-.006	.014	.073
Prosocial with Friends	-.061	.051	-.010	-.078	-.032	.090
Aggressive with Friends	-.014	.063	-.022	.014	.046	.032

<sup>†</sup>[marginally significant]

Note. Standardized beta weights from the paths predicting teacher reports aggression at grades 3, 5, and 6. Stability coefficients across time are reported. The model also controls for gender (Male = 1).  $N = 1,364$ .  $X^2(2) = 1.809, p > .05$ ; RMSEA = .000, 90% CI [0, .052]; CFI = 1.00; TLI = 1.015; SRMR = .004.

## REFERENCES

- Achenbach, T. M., McConaughy, S. H., & Howell, C. T. (1987). Child/adolescent behavioral and emotional problems: Implications of cross-informant correlations for situational specificity. *Psychological Bulletin*, *101*(2), 213-232.
- Acton, G. S. (2003). Measurement of impulsivity in a hierarchical model of personality traits: Implications for substance use. *Substance Use & Misuse*, *38*, 67-83. doi: 10.1081/JA-120016566
- Angold, A., Weissman, M. M., John, K., Merikangas, K. R., Prusoff, B. A., Wickramaratne . . . Warner, V. (1987). Parents and child reports of depressive symptoms in children at low and high risk of depression. *Journal of Child Psychology and Psychiatry*. *28*(6), 901-915.
- Arim, R. G., Dahinten, V. S., Marshall, S. K., & Shapka, J. D. (2011). An examination of the reciprocal relationships between adolescents' aggressive behaviors and their perceptions of parental nurturance. *Journal of Youth and Adolescence*, *40*, 207-220. doi: 10.1007/s10964-008-9493-x
- Bandura, A. (1965). Influence of model's reinforcement contingencies on the acquisition of imitative responses. *Journal of Personality and Social Psychology*, *1*, 589-595. doi: 10.1037/h0022070
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Babore, A., Carlucci, L., Cataldi, F., Phares, V., & Trumello, C. (2017). Aggressive behaviour in adolescence: Links with self-esteem and parental emotional availability. *Social Development*, *26*, 740-752. doi: 10.1111/sode.12236
- Bagwell, C. L., & Coie, J. D. (2004). The best friendships of aggressive boys: Relationship quality, conflict management, and rule-breaking behavior. *Journal of Experimental Child Psychology*, *88*, 5-24.
- Becht, A. I., Prinzie, P., Deković, M., Van Den Akker, A. L., & R. L. Shiner. (2016). Child personality facets and overreactive parenting as predictors of aggression and rule-breaking trajectories from childhood to adolescence. *Development and Psychopathology*, *28*, 399-413. doi: 10.1017/S0954579415000577
- Björkqvist, K., Lagerspetz, K. M. J., & Kaukiainen, A. (1992). Do girls manipulate and boys fight? Developmental trends in regard to direct and indirect aggression. *Aggressive Behavior*, *18*, 118-127. doi: 10.1002/1098-2337(1992)18:2<117::AID-AB2480180205>3.0.CO;2-3
- Bird, H. R., Gould, M. S., & Staghezza, B. (1992). Aggregating data from multiple informants in child psychiatry epidemiological research. *Journal of American Academy of Child and Adolescent Psychiatry*.

- Boutin, S., Verlaan, P., Denault, A., & Dery, M. (2017). Early risk predictors of girls indirect aggression from early childhood to early adolescence in an at-risk sample. *Sex Roles, 76*, 175-187. doi: 10.1007/s11199-016-0656-4
- Bowlby, J. (1988). *A secure base: Clinical applications of attachment theory*. London: Routledge.
- Bowie, B. H. (2007). Relational aggression, gender, and the developmental process. *Journal of Child and Adolescent Psychiatric Nursing, 20*(2), 107-116.
- Bukowski, W. M., Castellanos, M., Vitaro, F., & Brendgen, M. (2016). Socialization and experiences with peers. In J. E. Grusec and P. D. Hastings (Eds.), *The handbook of socialization* (2nd ed., pp. 35-59). New York, NY: Guilford Press.
- Card, N. A., Stucky, B. D., Sawalani, G. M., Little, T. D. (2008). Direct and indirect aggression during childhood and adolescence: A meta-analytic review of gender differences, intercorrelations, and relations to maladjustment. *Child Development, 79*(5), 1185-1229. Retrieved from <http://www.jstor.org/stable/27563548>
- Cairns, R. B., Cairns, B. D., Nickerman, H. J., Gest, S. D., & Gariépy, J. (1988). Social networks and aggressive behavior: Peer support or peer rejection? *Developmental Psychology, 24*(6), 815-823.
- Center for Disease Control and Prevention (2017, July 17). *Aggressive behavior and violence*. Retrieved from <https://www.cdc.gov/ncbddd/disabilityandsafety/aggression.html>
- Chaux, E., Molano, A., & Podlesky, P. (2009). Socio-economic, socio-political and socio-emotional variables explaining school bullying: A country-wide multilevel analysis. *Aggressive Behavior, 35*, 520-529. doi: 10.1002/ab.20320
- Cleverley, K., Szatmari, P., Vaillancourt, T., Boyle, M., & Lipman, E. (2012). Developmental trajectories of physical and indirect aggression from late childhood to adolescence: Sex differences and outcomes in emerging adulthood. *Journal of the American Academy of Child & Adolescent Psychiatry, 51*(10), 1037-1051.
- Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development, 66*, 710-722.
- Davidov, M., & Grusec, J. E. (2006). Untangling the links of parental responsiveness to distress and warmth to child outcomes. *Child Development, 77*, 44-58. doi: 10.1111/j.1467-8624.2006.00855.x
- De Los Reys, A., Augenstein, T. M., Wang, M., Thomas, S. A., Drabick, D. A. G., Burgers, D. E., & Rabinowitz, J. (2015) The validity of the multi-informant approach to assessing child and adolescent mental health. *Psychological Bulletin, 141*, 858-900. doi: 10.1017/a0038498
- Denham, S. A., Blair, K. A., DeMulder, E., Levitas J., Sawyer, K., Auerbach-Major, S., & Queenan, P. (2003). Preschool emotional competence: Pathway to social competence? *Child Development, 74*, 238-356.
- Denham, S. A., Mitchell-Copeland, J., Strandberg, K., Auerbach, S., & Blair, K. (1997). Parental contributions to preschoolers' emotional competence: Direct and indirect effects. *Motivation and Emotion, 21*(1), 65-85.

- Dodge, K., Coie, J., & Lynam, D. (2006). Aggression and antisocial behavior in youth. In W. Damon & N. Eisenberg (Eds.), *The handbook of child psychology* (6th ed., pp. 719-788). New York, NY: Wiley.
- Eisenberg, N., Fabes, R. A., Shepard, S. A., Guthrie, I. K., Murphy, B. C., & Reiser, M. (1999). Parental reactions to children's negative emotions: Longitudinal relations to quality of children's social functioning. *Child Development, 70*, 513-534.
- Eisenberg, N., Valiente, C., Morris, A. S., Fabes, R. A., Cumberland, A., Reiser, M., ... Losoya, S. (2003). Longitudinal relations among parental emotional expressivity, children's regulation, and quality of socioemotional functioning. *Developmental Psychology, 39*, 3-19. doi: 10.1037/0012-1649.39.1.3
- Fabes, R. A., Leonard, S. A., Kupanoff, K., & Martin, C. L. (2001). Parental coping with children's negative emotions: Relations with children's emotional and social responding. *Child Development, 72*, 907-920.
- Fang, X., Li, X., Stanton, B., & Dong, Q. (2003). Social network positions and smoking experimentation among Chinese adolescents. *American Journal of Health Behavior, 27*, 257-267. doi: 10.5993/AJHB.27.3.7.
- Fite, P. J., Colder, C. R., Lochman, J. E., & Wells, K. C. (2008). Developmental trajectories of proactive and reactive aggression from fifth to ninth grade. *Journal of Clinical Child and Adolescent Psychology, 37*, 412-421. doi: 10.1080/15374410801955920
- Goldstein, S. E., & Tisak, M. S. (2010). Adolescents' social reasoning about relational aggression. *Journal of Child and Family Studies, 19*, 471-482. doi: 10.1007/s10826-009-9319-1
- Hartup W. W., Glazer, J. A., & Charlesworth, R. (1967). Peer reinforcement and sociometric status. *Child Development, 38*(4), 1017-1024. Retrieved from [https://www.jstor.org/stable/1127099?seq=1#page\\_scan\\_tab\\_contents](https://www.jstor.org/stable/1127099?seq=1#page_scan_tab_contents)
- Hawley, P. H. (1999). The ontogenesis of social dominance: A strategy-based evolutionary perspective. *Developmental Review, 19*, 97-132. doi: 10.1006/drev.1998.0470
- Hawley, P. H., & Geldhof, G. J. (2012). Preschoolers' social dominance, moral cognition, and moral behavior. *Journal of Experimental Child Psychology, 112*, 18-35. doi: 10.1016/j.jecp.2011.10.004
- Hay, D. F. (1984). Social conflict in early childhood. *Annual Child Development, 1*(1), 1-44.
- Hay, D. F. (2005). Early peer relations and their impact on children's development. In *Encyclopedia on Early Childhood Development* [online]. (pp. 1-6). Montreal, Quebec: Center of Excellence for Early Childhood Development.
- Hay, D. F., Payne, A., & Chadwick, A. (2004). Peer relations in childhood. *Journal of Child Psychology and Psychiatry, 45*(1), 84-108.
- Heilbron, N., & Prinstein, M. J. (2008). A review and reconceptualization of social aggression: Adaptive and maladaptive correlates. *Clinical Child and Family Psychology Review, 11*, 176-217. doi: 10.1007/s10567-008-0037-9
- Henneberger, A. K., Coffman, D. L., & Gest, S. D. (2017). The effect of having aggressive friends on aggressive behavior in childhood: Using propensity scores

- to strengthen causal inference. *Social Development*, 26, 295-309. doi: 10.1111/sode.12186
- Howes, C., & Phillipsen, L. (1998). Continuity in children's relations with peers. *Social Development*, 7, 340-350. doi: 10.1111/1467-9507.00071
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus alternatives. *Structural Equation Modeling: A multidisciplinary Journal* 6, 1-155. doi: 10.1080/10705519909540118
- Jansen, D. E., Veenstra, R., Ormel, J., Verhulst, F. C., & Reijneveld, S. A. (2011). Early risk factors for being a bully, victim, or bully/victim in late elementary and early secondary education. The longitudinal TRAILS study. *BMC Public Health*, 11, 440-446. doi: 10.1186/1471-2458-11-440
- Kenny, D. A. (2015). Multiple Regression. Retrieved from <http://davidakenny.net/cm/mr.htm>
- Kline, R. B. (2005). *Principles and practice of structure equation modeling*. (2nd ed.). New York: The Guilford.
- Kochanska, G., & Kim, S. (2012). Toward a new understanding of legacy of early attachments for future antisocial trajectories: Evidence from two longitudinal studies. *Development and Psychopathology*, 24, 783-806. doi: 10.1017/S0954579412000375
- Kokkinos, C. M. (2013). Bullying and victimization in early adolescence: Associations with attachment style and perceived parenting. *Journal of School Violence*, 12, 174-192. doi: 10.1080/15388220.2013.766134
- Laible, D., Carlo, G., Davis, A. N., Karahuta, E. (2016). Maternal sensitivity and effortful control in early childhood as predictors of adolescents' adjustment: The mediating roles of peer group affiliation and social behaviors. *Developmental Psychology*, 52, 922-932. doi: 10.1037/dev0000118
- Laible, D., McGinley, M., Carlo, G., Augustine, M., & Murphy, T. (2014). Does engaging in prosocial behavior make you see the world through rose colored glasses? The links between social information processing and prosocial behavior. *Developmental Psychology*, 50, 872-880. doi: 10.1037/a0033905
- Laible, D., Thompson, R. A., & Froimson, J. (2016). Early socialization: The influence of close relationships. In J. E. Grusec and P. D. Hastings (Eds.), *The handbook of socialization* (2nd ed., pp. 35-59). New York, NY: Guilford Press.
- Lagerspetz, K. M. J., Björkqvist, K., & Peltonen, T. (1988). Is indirect aggression more typical of female? Gender differences in aggressiveness in 11 to 12 year-old children. *Aggressive Behaviors*, 14, 403-414.
- Lansu, T. A. M., Cillessen, A. H. N., & Bukowski, W. M. (2013). Implicit and explicit peer evaluation: Associations with early adolescents' pro sociality, aggression, and bullying. *Journal of Research on Adolescence*, 23, 762-771. doi: 10.1111/jora.12028
- Little, T. D. (2013). *Longitudinal structural equation modeling*. The Guilford Press. New York.

- Loeber, R., Hay, D. (1997). Key issues in the development of aggression and violence from early childhood to early adulthood. *Annual Review of Psychology*, *48*, 371-410.
- Mascaro, O., & Csibra, G. (2014). Human infants' learning of social structures: The case of dominance hierarchy. *Psychological Science*, *25*, 250-255. doi: 10.1177/0956797613500509
- Miller, P. H. (2016). *Theories of Developmental Psychology, 6th Ed.* New York, NY: Worth Publishers.
- Monahan, K. C., & Booth-LaForce, C. (2015). Deflected pathways: Becoming aggressive, socially withdrawn, or prosocial with peers during the transition to adolescence, *Journal of Research on Adolescence*, *26*, 270-285. doi: 10.1111/jora.12190
- Österman, K., Björkqvist, K., Lagerspetz, K. M. J., Kaukiainen, A., Landau, S. F., Fraczek, A., et al. (1998). Cross-cultural evidence of female indirect aggression. *Aggressive Behavior*, *24*, 1-8.
- Pang, J. S., Ang, R. P., Kom, D. M. Y., Tan, S. H., & Chiang, A. Q. M. (2013). Patterns of reactive and proactive aggression in young adolescents in Singapore. *Social Development*, *22*, 794-812. doi: 10.1111/sode.12024
- Petraitis, P. S., Dunham, A. E., & Niewiarowski, P. H. (1996). Inferring multiple causality: The limitations of path analysis. *Functional Ecology*, *10*(4), 421-431. Retrieved from <http://www.jstor.org/stable/pdf/2389934.pdf?refreqid=excelsior%3A8d60242c58d674dbf5f13ed845dc5715>
- Rubin, K. H., Bukowski, W., & Parker, J. G. (2006). Peer interactions, relationships, and groups. In W. Damon (Series Ed.) & N. Eisenberg (Vol. Ed.), *The handbook of child psychology* (5th ed., pp. 619-700). New York, NY: Wiley.
- Sharma, M. K., & Marimuthu, P. (2014). Prevalence and psychosocial factors of aggression among youth. *Indian Journal of Psychological Medicine*, *36*, 48-53. doi: 10.4103/0253-7176.12749
- Spieker, S. J., Campbell, S. B., Vandergrift, N., Pierce, K. M., Kauffman, E., Susman, E. J. ... NICHD ECCRN (2012). Relational aggression in middle childhood: Predictors and adolescent outcomes. *Social Development*, *21*, 354-375. doi: 10.1111/j.1467-9507.2011.00631.x
- Thompson, R. A. (2008). Early attachment and later development: Familiar questions, new answers. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (2nd ed., pp. 348-365). New York, NY: Guilford Press.
- Undheim, A. M., & Sund, A. M. (2010). Prevalence of bullying and aggressive behavior and their relationship to mental health problems among 12- to 15-year-old Norwegian adolescents. *European Child Adolescent Psychiatry*, *19*, 803-811. doi: 10.1007/s00787-010-0131-7
- Vaillencourt, T., Brittain, H. L., McDougall, P., & Duku, E. (2013). Longitudinal links between childhood peer victimization, internalizing and externalizing problems,

- and academic functioning: Developmental cascades. *Journal of Abnormal Child Psychology*, *41*, 1203-1215. doi: 10.1007/s10802-013-9781-5
- Volk, A. A., Veenstra, R., Espelage, D. L. (2017). So you want to study bullying? Recommendations to enhance the validity, transparency, and compatibility of bullying research. *Aggression and Violent Behavior*, *36*, 34-43. doi: 10.1016/j.avb.2017.07.003
- Williford, A. Boulton, A. J., Forrest-Bank, S. S., Bender, K. A., Dieterich, W. A., & Jenson, J. M. (2016). The effect of bullying and victimization on cognitive empathy development during the transition to middle school. *Child & Youth Care Forum*, *45*, 525-541. doi: 10.1007/s10566-015-9343-9
- Zahrt, D. M., & Melzer-Lange, M. D. (2011). Aggressive behavior in children and adolescents. *Pediatrics in Review*, *32*, 325-332. doi: 10.1542/pir.32-8-325



## **BIOGRAPHY**

My journey began with my earning an AS from Richard Bland College, of William and Mary, and a BS in Psychology from Virginia Commonwealth University. During my time as an undergraduate, I gained various research experiences, most notably by working in the Kliewer Prevention Research Lab with Dr. Wendy Kliewer. It was there that I realized my passion for research in child and adolescent development. My experiences thus far have helped me to narrow my research interests within the Developmental Psychological field. Specifically, my research interests are in peer and social relationships during childhood and adolescence and how these relationships may serve as predictors of and serve in interventions for various maladaptive behaviors such as bullying, aggression, drug use, and delinquency.