Adolescent Aggression: An Indirect Link between Parenting and Aggression

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

by

Maximillian L. Shear
Bachelor of Arts
George Mason University, 1987

Director: Kari Visconti, Professor
Department of Psychology

Summer Semester 2014
George Mason University
DEDICATION

This is dedicated to the boy who refused to follow the path paved in words of destruction and discouragement. He could read, he could write, and he has learned what it means to succeed.
ACKNOWLEDGEMENTS

I would like to thank my friends and family who continue to stand by my side. Furthermore, I would like to thank my advisor, Dr. Kari Visconti, along with the professors and faculty at George Mason whom have provided me with guidance. Without these dedicated leaders surely I would have been lost. Finally, a special thanks to my partner in crime, my love, my fiancé, Alyssa. The patience you exhibit is only surpassed by your love and support.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>List of Tables</td>
<td>viii</td>
</tr>
<tr>
<td>List of Figures</td>
<td>ix</td>
</tr>
<tr>
<td>List of Abbreviations</td>
<td>x</td>
</tr>
<tr>
<td>Abstract</td>
<td>xi</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Parenting in Adolescence</td>
<td>2</td>
</tr>
<tr>
<td>Parenting and Peer Victimization</td>
<td>5</td>
</tr>
<tr>
<td>Mediators of the Parenting-Victimization Link</td>
<td>7</td>
</tr>
<tr>
<td>Overview and Implications of the Current Study</td>
<td>9</td>
</tr>
<tr>
<td>METHOD</td>
<td>13</td>
</tr>
<tr>
<td>History and Methods of NICH SECCYD</td>
<td>13</td>
</tr>
<tr>
<td>Participants</td>
<td>14</td>
</tr>
<tr>
<td>Measures</td>
<td>14</td>
</tr>
<tr>
<td>RESULTS</td>
<td>17</td>
</tr>
<tr>
<td>Descriptive Statistics and Correlations Among the Observed Parenting Variables</td>
<td>17</td>
</tr>
<tr>
<td>Confirmatory Factor Analysis</td>
<td>19</td>
</tr>
<tr>
<td>Gender Differences in Latent and Observed Variables</td>
<td>22</td>
</tr>
<tr>
<td>Correlations among Latent and Observed Variables</td>
<td>24</td>
</tr>
<tr>
<td>Structural Associations Among Parenting, Aggression, and Peer Victimization</td>
<td>25</td>
</tr>
<tr>
<td>Statistical Mediation</td>
<td>32</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td>33</td>
</tr>
<tr>
<td>Types of Parenting</td>
<td>33</td>
</tr>
<tr>
<td>Associations between Parenting and Adolescents’ Social Behavior</td>
<td>34</td>
</tr>
<tr>
<td>Gender differences in the Indirect Effect of Parenting on Victimization</td>
<td>39</td>
</tr>
<tr>
<td>Implications for Intervention</td>
<td>40</td>
</tr>
<tr>
<td>Limitations</td>
<td>41</td>
</tr>
</tbody>
</table>
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1: Descriptive Statistics for Total Sample, Boys, and Girls</td>
<td>18</td>
</tr>
<tr>
<td>Table 2: Bivariate correlations among observed parenting indicators</td>
<td>19</td>
</tr>
<tr>
<td>Table 3 Bivariate Correlations among latent parenting constructs and observed study variables</td>
<td>25</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

Figure 1. Standardized items loading for the confirmatory factor analysis for maternal and parental parenting styles. ................................................................. 23
Figure 2. Associates among parenting, instrumental overt aggression and peer victimization. Unstandardized path estimates presented first and standard errors are presented in parentheses ........................................... 28
Figure 3. Associations among parenting, reactive overt aggression, and peer victimization. Unstandardized paths are presented first and standard errors are presented in parentheses ........................................................................... 29
Figure 4. Associations among parents, relational aggression, and peer victimization. Unstandardized path estimates are presented first and standard errors are presented in parentheses ........................................................................... 31
LIST OF ABBREVIATIONS

Child Protective Services ........................................................................................................ CPS
National Institute of Child Health and Human Development ........................................ NICHD
The Study of Early Child Care and Youth Development .................................................. SECCYD
ABSTRACT

ADOLESCENT AGGRESSION: AN INDIRECT LINK BETWEEN PARENTING AND AGGRESSION

Maximillian L. Shear, M.A.

George Mason University, 2014

Thesis Director: Dr. Kari Visconti

Research points to peer victimization as a considerable source of distress during adolescence. Much of the empirical attention placed on peer victimization focuses on risk factors for youth becoming the target of aggression. Included in these risk factors is the manner in which parents interact with their adolescent children. Although the association between parenting and peer victimization is an important one, the nature of the associations between teens’ interactions with their parents and the manner in which they are treated by peers has been largely unaddressed. Using age 15 data of the NICHD SECCYD study, the current study aimed to explore potential mechanisms that mediate the relationship between parenting and peer victimization in adolescence. Specifically, it was hypothesized that adolescents’ aggressive behavior would account for the association between parenting and teens’ experiences with peer victimization. Results indicate that adolescents’ relational aggression mediated the indirect relationship between maternal
hostile parenting and higher levels of adolescent self-reports of peer victimization. This mediated effect was particularly strong among boys, for whom relationally aggressive behavior appears to be a particularly notable risk factor for peer victimization. Implications for future research and school and home interventions are discussed.
INTRODUCTION

Over the years there has been a wealth of research on the links between parenting and child development. Findings overwhelmingly suggest that parenting is of paramount importance to the wellbeing of children and adolescents. Indeed, parenting has been linked to numerous indices of children’s adjustment, including psychological and emotional wellbeing (LeMoyne & Buchanan, 2011; Milevsky, Schlechter, Netter, and Keehn, 2006), internalizing and externalizing problems (Amato & Gilbreth, 1999; Buckingham-Howes, Oberlander, Hurley, Fitzmaurice, & Black, 2011), academic readiness and success (Amato & Gilbreth, 1999; Coley, Lewin-Bizan, & Carrano, 2011; Dishion, Patterson, Stoolmiller, & Skinner, 1991; Martin, Ryan, & Brooks-Gunn, 2010; Watkins-Lewis & Hamre, 2012), executive function (Bernier, Carlson, & Whipple, 2010; NICHD Early Child Care Research Network [ECCRN], 2004; Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004; van der Voot, Juffer, & Bakermans-Kranenburg, 2014), cognitive development (Cabrera, Fagan, Wight, & Schadler, 2011; Coley, Lewin-Bizan, & Carrano, 2011; NICHD Early Child Care Research Network [ECCRN], 2004; Tamis-LeMonda, et al., 2004), deviant behavior (e.g. oppositional defiant behavior, Dette-Hagenmeyer & Reichle, 2013; Lindsay, Strand, & Davis, 2011), and brain development (Belsky & de Haan, 2011; Knafo, Israel, & Ebstein, 2011). Not surprisingly, parenting has also been consistently associated with children’s social functioning,
including socio-emotional development (Cabrera, Fagan, Wight, & Schadler, 2011; Dette-Hagenmeyer & Reichle, 2013), social skills (Engels, Finkenauer, Meeus, & Dekovic, 2001; Zahn-Waxler, & Smith, 1992), peer group affiliation (Brown, Mounts, Lamborn, & Steinberg, 1993), and quality of interactions with agemates (Parke et al, 1989).

**Parenting in Adolescence**

Although the majority of research cited above has focused on the influences of parenting during early and middle childhood, both the positive and negative effects of parenting are not limited to earlier developmental periods. Parenting continues to influence development and adjustment throughout adolescence. Specifically, researchers examining adolescent outcomes have found significant associations between parenting and such areas as self-esteem (Arbona & Power, 2003; Laible, Carlo, & Roesch, 2004), school success and achievement (Steinberg, Mounts, Lamborn, & Dornbusch, 1991; Steinberg, Lamborn, Dornbusch, & Darling, 1992), self-efficacy (Arbona & Power, 2003) delinquent behavior (Mack, Leiber, Featherstone, & Monserud, 2007), social skills and social competence (Engels, et al., 2001), and social trust (Wray-Lake & Flanagan, 2012). For example, it has been found that warm parenting, characterized by caring, affection, quality communication, and supportive parenting, has positive effects on how youth utilize prosocial behavior, social competence (Eisenberg, Fabes, & Spinard, 1998; Laible, Carlo, Torquati, & Ontai, 2004; Maccoby & Martin, 1983), and, in general, developmental well-being (National Institute of Child Health and Human Development [NICHD] Early Child Care Research Network, 2002). Conversely, hostile parenting,
characterized by harsh, rash, cold, affectionless, and unreliable parenting strategies, has been linked to greater antisocial behavioral (Coie & Dodge, 1998; Patterson, 1986), aggression (Deater-Deckard & Dodge, 1997; Rothbaum & Weisz, 1994), and externalizing problems (Rothbaum & Weisz).

Many researchers who have examined the role of parenting in adolescence have given particular attention to the manner in which parents can influences youths’ interactions and relationships with their peers. This attention is perhaps not surprising, given the central role of peer relationships in adolescents’ psychological, social, and school adjustment (Fine, 1981; Fine & Rosnow, 1978; Hansell, 1981; Ladd, 1990; Parker, Rubin, Price, & DeRosier, 1995; Suls, 1977). Positive peer relationships, including high-quality friendships, bolster resilience and encourage healthy adjustment (Hodges, Boivin, Vitaro, & Bukowski, 1999; Waldrip, Malcolm, & Jensen-Campbell, 2008). Alternatively, a significant number of adolescents experience difficulties among peers, such as chronic peer victimization or rejection. These stressful peer encounters have been linked to numerous indices of maladjustment, including greater loneliness, anxiety, and depression, and have lower self-esteem (Boivin & Hymel, 1997; Crick & Grotpeter, 1996; Egan & Perry, 1998; Kochenderfer & Ladd, 1996), school avoidance (Kochenderfer & Ladd, 1996), truancy and delinquent behavior (Sullivan, Farrell, & Kliwer, 2006), and suicidality (Heilbron & Prinstein, 2010; Marr & Field, 2001).

Researchers have indicated that although youth spend a decreasing amount of time with parents as they enter their teen years (Larson, Richards, Moneta, Holmbeck, & Duckett, 1996), parenting may still have a significant and lasting impact on the nature of
adolescents’ peer relationships. For example, Brown, and colleagues (1993) have suggested that parents exert direct effects over their children’s peer relationships by acting as gatekeepers, directing youth toward various cliques and groups. A parent that is concerned that their child is involved in the wrong group of friends may, for example, attempt to exercise direct control over the situation, dictating the peers with whom their children will interact. Parents also maintain direct control in a less explicit manner, via decisions made based on the community, neighborhood, and school a child attends (Rubin & Sloman, 1984). This is important for high school youth, for whom social groups are particularly influenced by the community in which they are located (Brown, et al., 1993; Coleman, 1961; Hollingshead, 1949; Lynd & Lynd, 1957). Brown et al. (1993) uses a perfect example of this is when they describe the struggle for parents attempting to guide a child into an athletic crowd at school. When an athletic crowd for that school and community is nonexistent, a parent must attempt to influence the creation of an athletic crowd, or alternatively accept that their child will not be part of the absent athletic crowd.

Further, it is likely that to some degree the effects of parenting on adolescent’s social adjustment occur through the modeling of behavior during social interactions. The influence of parental modeling of behaviors has a long and illustrious history in developmental research, often indicating, for example, that the children of parents who engage in deviant behaviors will themselves have a higher likelihood of displaying deviant behavior (e.g., drug use, Kandel & Andrews, 1987; Oetting & Beauvais, 1987; delinquency, Marcos, Bahr, & Johnson, 1986; Massey & Krohn, 1986).
However, the association between parenting and adolescent behavior may be more complex and nuanced than straight-forward modeling or gatekeeping strategies. Behavioral norms may, for example, be passed from parents to teens through the transmission of value systems (Whitbeck, Simons, Conger, & Lorenz, 1989) or strategies for handling social conflict. In line with this, Brown and colleagues, (1993) suggest that parents’ own values will influence both their adolescents’ value system, resulting in behaviors and values that influence their peer affiliation. The authors illustrate their theory that parents may indirectly influence peer affiliation with an example of youths’ associations with high status (i.e., “popular”) peers. In particular, popular youth typically have parents who promote education and excellence in academic endeavors. As evidenced by Brown et al., (1993), youth in high-status crowds tend to have relatively high levels of academic achievement. As such, their pursuit of academic excellence would be both an expectation necessary for peer group entry as well as a behavior that is reinforced by the norms of the social crowd.

**Parenting and Peer Victimization**

Although the research conducted by Brown and colleagues (1993) provides an interesting theoretical model for how parents can indirectly influence peer group affiliation, less is known about the specific paths through which parenting may impact the way adolescents are *treated* by their peers. As mentioned above, the manner in which adolescents are treated by members of their peer group can have significant and lasting implications for their adjustment. Perhaps one of the most impactful types of peer treatment comes in the form of peer victimization. Peer victimization, or bullying, is
chronic, hostile treatment from a peer or group of peers that is repeated, intended to cause harm, and involves an imbalance of power such that the victim is at a disadvantage when trying to stop the harassment (Olweus, 1978). Decades of research speak to the numerous and lasting effects of chronic victimization, including adjustment problems (e.g. loneliness (Boivin & Hymel, 1997), school anxiety and avoidance (Buhs, Ladd, & Herald, 2006; Kochenderfer & Ladd, 1996; Kumpulainen et al., 1998), depression (Hawker & Boulton, 2000; Kaltiala-Heino, Rimpela, Marttunen, Rimpela, & Rantanen, 1999), suicidal ideation (Bonanno & Hymel, 2010; Heilbron & Prinstein, 2010), social isolation and withdrawal (Boivin, Petitclerc, Feng, & Barker, 2010; Hawker & Boulton, 2000), internalizing and externalizing problems (Troop-Gordon & Ladd, 2005), and low self-esteem (Egan & Perry, 1998; Juvonen, Nishina, & Graham, 2000).

Several studies have successfully modeled parenting behaviors and family contextual factors as direct predictors of youth’s peer victimization. For example, parenting that is harsh and overly controlling, such as an authoritarian parenting style, has been associated with higher rates of peer victimization (Swearer & Doll, 2001). Further, Yeung and Leadbeater (2010) found that adolescents who reported lower levels of emotional support from their parents experienced greater peer victimization at school, as compared to adolescents whose parents expressed high levels of emotional support. In more extreme cases, reports of abuse (Swearer & Doll, 2001) and involvement with child protective services (Mohapatra, et al., 2010) have also been implicated as risk factors for greater levels of peer victimization. Including peer victimization as an outcome of parenting is an important theoretical distinction from the model described by Brown et al.
(1993) because unlike models of predicting peer affiliation (which is largely a choice enacted by the individual child), peer victimization describes a phenomenon that occurs to a child. Thus, describing the process by which parenting predicts peer victimization presents the challenge of determining how social interactions in one unique social realm influence social interactions in a separate unique social realm. This is particularly troublesome in adolescence, during which the social spheres of home and school/leisure are becoming increasingly distinct and youth are increasingly autonomous.

**Mediators of the Parenting-Victimization Link**

Although there is a well-established connection between parenting and peer victimization, the indirect paths through which this association may occur are currently unclear. One method of explicating the indirect processes that link social interactions in the home to social interactions with age mates is to first understand the behavioral factors that put youth at risk for peer victimization. One consistent factor that appears to put youth at a substantial risk for greater peer victimization is their own use of aggressive behavior (Schwartz, 2000; Schwartz, Proctor, & Chien, 2001). First discussed by Olweus (1978), aggressive victims (or “bully-victims”), consist of youth who are both aggressive and targeted with peer bullying, instead of being timid or submissive. Researchers theorize that aggressive youth lack well-developed emotion regulation and impulse control (Graham, Bellmore, & Mize, 2006; Schwartz, 2000). Their aggressive, disruptive behavior tends to irritate their peers and, in response, provoke bullying from others (Boivin & Hymel, 1997; Egan & Perry, 1998; Hodges, Malone, & Perry, 1997; ; Hanish, Guerra, 2000; Juvonen, 1991; Olson, 1992; Olweus, 1978; Schwartz, Dodge, & Coie,
Aggressive youth are also likely to associate with other aggressive peers (Farmer, et al., 2003). This proximity to aggressors may also increase the risk of youth becoming the victims of bullying.

The same aggressive behaviors that put adolescents at increasing risk for peer victimization have also been repeatedly linked to parenting behaviors. As asserted by Bandura’s (1973) classic social learning theory, the majority of children grow up watching and observing the behaviors of their parents. Aggression within the home, such as that demonstrated through hostile, manipulative, or dismissive parenting, can leave a lasting impression on a child, whether through direct modeling or more indirect processes of socialization (Bandura, 1989). In line with this, researchers have linked family process with both overt (Crick & Dodge, 1994) and relational (Hart, Nelson, Robinson, Olsen, & McNeilly-Choque, 1998; Werner & Crick, 1999) forms of aggression. Specifically mothers who display negative affect, overreactivity, and laxness in their parenting are more likely to have children with higher rates of relational aggression than mothers who displayed positive affect (Brown, Arnold, Dobbs, & Doctoroff, 2007). Harsh parenting from fathers has also been linked to greater childhood aggression (Chang, et al., 2003). These findings are not only limited to children; in a longitudinal study, Conger, Neppl, Kim, and Scaramella (2003) found that parenting plays both a direct and indirect role in overt forms of aggressive behavior in adolescents. Results from this study supported the social learning perspective, suggesting that children can learn and model aggressive, antisocial behavior from their parents.
Overview and Implications of the Current Study

When combined, the significant influences of parenting on adolescents’ aggressive behavior and the subsequent associations between aggression and increased risk of being targeted for peer victimization suggest that aggressive behavior may be one potential behavioral factor that may account for the influence of parenting on peer victimization. In other words, the socialization of aggressive behavior in the home may account for parents’ ability to impact youths’ social relationships outside of their immediate sphere of influence. In line with this, the current study aimed to examine two related hypotheses including (1) whether warm and hostile parenting from mothers and fathers predicted peer victimization among their adolescent children and (2) whether the link between parenting and peer victimization would be mediated by adolescents’ own aggressive behavior.

Maternal and paternal parenting styles were included as potential predictors of youth’s social behavior. While it has been shown that mothers typically take a more prominent role in child rearing during the workweek, fathers have been found to share childrearing responsibilities, particularly during weekends (Yeung, Sandberg, Davis-Kean, & Hofferth, 2001). Due to choice (Gilbert, 1994; Radin, 1988), finances/maternal breadwinners (Raley, Bianchi, & Wang, 2012), interest from the feminist movement (Silverstein, 1996), and social progress and change (Gregory & Milner, 2011; Silverstein, 1996) fathers have become a much more prominent figure at home and have taken on more or even equal responsibility in child rearing (Pleck, 2004). Much of the research of today includes both parents, examining the shared and orthogonal relationship parents have on their child’s development and adjustment.
Further, three unique forms of aggression were examined as potential mediators of the parenting-victimization link: instrumental overt aggression, reactive overt aggression, and relational aggression. Overt aggression refers to hostile behavior such as physical aggression (e.g., hitting or kicking), verbal aggression (e.g., name calling, threats), or damage to property. The category of overt aggression is further divided into two distinct subtypes: instrumental and reactive overt aggression (Dodge, 1991; Fontaine, 2007; Quay, Routh, & Shapiro, 1987; Vitaro, Brendgen, & Barker, 2006). Instrumental overt aggression refers to overtly hostile behavior that is goal-directed and intentional. This form of aggression is commonly thought of as being more intentional and more strongly under the control of the aggressor. Conversely, reactive overt aggression refers to overtly hostile behaviors that occur in response to some form of provocation, such as teasing or bullying.

In contrast to the overt forms of aggression discussion above, relational aggression is more covert and includes behaviors such as spreading rumors, exclusion, non-verbal expressions (e.g., glaring, rolling eyes), noises (e.g., oinking like a pig), and especially behaviors associated with harming social relationships (Crick Grotpeter, & Bigbee, 2002; Desjardins & Leadbeater, 2011). The goal of relational aggression is to cause social harm, such as damaging another’s social status, reputation, or ties in the peer group (Bjoerkqvist, Lagerspetz, & Kaukiainen, 1992; Crick, Casas, & Mosher, 1997; Hart, et al., 1998; Willoughby, Kupersmidt, & Bryant, 2001).

Finally, associations between parenting, aggression, and peer victimization were examined for potential gender differences. Although these analyses were largely
exploratory, prior research indicates that the prevalence of victimization and aggression may differ between male and female youth. For example, the prevalence of relational aggression tends to be slightly higher for girls (between 17%-21%) as compared to boys (between 14%-18%) worldwide (Crick Grotpeter, & Bigbee, 2002; Desjardins & Leadbeater, 2011), whereas overt forms of aggression and victimization have been found to be higher for boys (Crick & Grotpeter, 1996; Prinstein, Boergers, & Vernberg, 2001). Interestingly though, relational forms of victimization have been found to be more commonly reported for both boys and girls as compared to overt aggressions (Prinstein, Boergers, & Vernberg, 2001), emphasizing the need to include this unique form of aggression. Additionally, some of the documented gender differences in the forms of aggression are attributed to gender differences in popularity (Ladd, 1983) and how children socialize, factors that become even more apparent with age (Rose & Rudolph, 2006).

In general, it was hypothesized that the observed parenting constructs included in the current study would be represented by two unique parenting factors: warm parenting and hostile parenting. Additionally, it is hypothesized that parenting, regardless of the gender of the parent, would have an indirect effect on adolescent reports of victimization via youth’s aggressive behavior, such that hostile parenting would predict greater victimization through higher levels of aggression and warm parenting would predict lower victimization through lower levels of aggression. Meaning that the effects of a child having a parent that exhibits warm, supportive and positive parenting, would decrease the likelihood of the adolescent displaying aggressive behavior, in turn reducing
the likelihood of adolescent self reports of victimization. When a child has a harsh, cold, hostile parent at home they are more likely to be aggressive, which will result in higher risk for adolescent self-reports of peer victimization. Following Bandura’s social learning theory, parenting valence will be important, meaning positive, good parenting will predict children displaying positive and good behaviors, whereas, negative parenting would predict bad behaviors.

Although significant mediated effects were expected for all forms of aggression, it was hypothesized that relational aggression, more so than overt forms of aggression, would yield a significantly stronger mediating effect. This difference was expected to occur largely because relationally aggressive behaviors, such as manipulation and withdrawal of affection, are more strongly aligned with the types of hostile parenting behaviors that were assessed.

It is also hypothesized that this influence will be present regardless the gender of parent, however will increase based on gender concordance. According to previous research on how children model gendered behavior and gender differences in aggression types (Bandura, 1973; Bettencourt & Miller, 1996) it is expected that boys with hostile fathers will be at an increased risk for displaying overt forms of aggression, which will in turn increase the likelihood of their self-reported peer victimization. Additionally, it is expected that hostile mothers will exacerbate the relationally aggressive behavior of adolescent girls in this study (Crouter, Manke, & McHale, 1995; McHale, Crouter, & Whiteman, 2003; Perry & Bussey, 1979;).
METHOD

History and Methods of NICH SECCYD

The Study of Early Child Care and Youth Development (SECCYD) is a longitudinal study of the National Institute of Child Health and Human Development (NICHD). NICHD SECCYD began in 1991, designed with the intention to explore family characteristics and the effects of early care and education. The NICHD SECCYD study followed families from the birth of their child to age 15. At the onset of the study, 1,364 families were recruited from hospitals in 10 different locations across the United States (Vandell, et al., 2010). The ten locations were affiliated with the data collection for this study: Temple University, University of Arkansas at Little Rock, Harvard University and Wellesley College, University of California, Irvine, University of Kansas, University of North Carolina at Chapel Hill, University of Pittsburgh, University of Virginia, University of Washington at Seattle, and University of Wisconsin at Madison.

Assessments occurred while children were 1, 6, 15, 24, 36, and 54 months old, followed by annual assessments starting at kindergarten and continuing through grade 6. Funding for the SECCYD study ended in 2009 and final assessment occurred when the children were in 9th grade.

The current study utilized cross-sectional data from the age 15 wave of NICHD SECCYD’s phase IV. During this wave, data were collected through multiple research methodologies, including parent and child interviews, direct assessments of adolescents,
videotaped parent-child interactions, and survey questionnaires that were completed by adolescents and parents both in the lab and at home. The current study utilized adolescents’ self-report questionnaires and observations of parent-child interactions.

**Participants**

Participants for the current study included 958 families that participated in the age 15 wave of the NICHD Study of Early Child Care and Youth Development. Participants who did not have a biological parent were excluded from the analyses. Of this sample, 50.2% of the target youth were female. Participants were primarily Caucasian (81.5%), with smaller portions reporting African American (12%), Latino (5.6%), Asian (1.4%), American Indian (0.2%) and other ethnicity (5%). 47.9% of the sample had data from both parents; 47.3% from mothers only and 4.8% from fathers only.

Of the 928 families to report familial living arrangements, included in the current study, 64.9% of the households had a father living within the home.

**Measures**

**Observations of parenting behaviors.** Parent-adolescent interactions were used to assess specific dimensions of parenting behaviors. Interactions took place over a period of at least five minutes and ranged (due to discussing more than one question) up to a period of eight minutes. Observations were structured around parent-child discussions of one or more disagreement areas selected by the adolescent, such as how the child spends their free time, chores, and homework. These interactions were videotaped and later coded by trained research assistants. The coding scheme was adapted from several sources, including the micro-analytic coding systems by Joseph
Allen (Allen, et al., 1994), earlier ages portion of the NICHD Study of Early Child Care and Youth Development (Owen, Vaughn, Barfoot, & Ware, 1996; Owen, Klausli. & Murrey, 2000), and the Supportiveness Behavior Task Coding Manual (Allen, et al., 2001). Parenting behaviors were coded on five specific dimensions, including (1) parental validation/agreement (higher scores indicated higher frequency of positive reactions, e.g., parent directed agreements, insight, and compliments to the adolescent), (2) engagement (e.g., higher scores indicated higher frequency of engaged interactions, e.g., parent-adolescent improved mutual understanding), (3) inhibiting relatedness (higher scores indicated more active parental rejection and refusal to engage their child in a positive interaction), (4) hostility/devaluing (Higher scores indicated higher amounts of parental hostility toward the adolescent), and (5) valuing/warmth (higher scores indicated a higher occurrence of clear, frequent signs, of parental liking, warmth, and affection directed to their adolescent child). Each specific parenting behavior was rated on a 7-point scale ranging from 1 (Very low) to 7 (Very high). The specific coding scheme can be found at http://www.nichd.nih.gov/research/supported/seccyd/Pages/overview.aspx#instruments.

**Peer victimization.** Victimization was measured using the victim subscale of the Illinois Aggression Scale (Espelage, & Holt, 2001). This measure consists of 4 items measuring the amount of victimization adolescents experience from their peers over the month prior to completing this questionnaire. Specifically, adolescents were asked to report, over the past month, how often other students picked on them, other students made fun of them, other students called them names, and how often they got hit and
pushed by other students. Responses were provided on a Likert-type scale from 0 (Never victimized) to 4 (Victimized 7 or more times). This subscale demonstrated adequate internal reliability (Cronbach’s alpha = 0.85); composite scores were created (prior to the data being made publicly available) by averaging across the four items.

**Peer-directed aggression.** Adolescents’ self-reports were used to assess their engagement in peer-directed aggression. Participating adolescents provided information on 18 items tapping three previously established subtypes of aggression: (1) relational aggression (6 items; $\alpha = .68$; e.g., a manipulation or purposeful withdrawal of friendship or group acceptance, ostracism, rumor spreading, or gossiping, Crick and Grotpeter, 1995), (2) overt-reactive aggression (6 items; $\alpha = .81$; e.g., pushing, kicking, hitting, threatening, in response to some form of antagonistic preceding event or in response to something perceived to antagonize, Buss & Perry, 1992; Coie & Dodge, 1998; Parke & Slaby, 1983), and (3) overt-instrumental aggression (X items; $\alpha = .82$; e.g., unprovoked pushing, kicking, hitting, threatening, or some form of intentional dominance such as intimidation tactics; Bandura, 1973; Little, Jones, Henrich, & Hawley, 2003). Relational aggression items were adapted from measures by Crick and Grotpeter (1995). Both reactive and instrumental items were adapted from Dodge and Coie (1987). Participants responded to the items on a 4-point Likert-type scale ranging from 1 (Not at all true) to 4 (Completely true). These scales have been found to have good internal and external validity, along with acceptable internal consistency (Little et al., 2003). Items were averaged within each subscale to create composite aggression variables.
RESULTS

Descriptive Statistics and Correlations Among the Observed Parenting Variables

Descriptive statistics for all observed study variables, including the individual observed parenting variables, are presented in Table 1. Correlations among the ten observed parenting behavior variables are presented in Table 2. Correlations are presented separately for boys and girls. For both girls and boys, variables reflecting positive maternal parenting style (i.e., validation, engagement, and valuing/warmth) were all positively and significantly correlated with each other. A significant positive correlation was found between the two negative maternal parenting variables. As expected, significant negative correlations were found between the positive and negative maternal parenting variables. A similar pattern of correlations was found among the parental parenting variables. Positive, albeit small, correlations were also found between respective maternal and paternal parenting variables (correlations ranged from .10 to .22, all $ps < .05$).
Table 1: Descriptive Statistics for Total Sample, Boys, and Girls

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total Sample</th>
<th></th>
<th></th>
<th>Boys</th>
<th></th>
<th></th>
<th>Girls</th>
<th></th>
<th>F-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>Min</td>
<td>Max</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td></td>
</tr>
<tr>
<td>Instrumental Overt</td>
<td>1.13</td>
<td>.29</td>
<td>1.00</td>
<td>3.17</td>
<td>1.12</td>
<td>.26</td>
<td>1.01</td>
<td>.19</td>
<td>2.64</td>
</tr>
<tr>
<td>Aggression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reactive Overt</td>
<td>1.69</td>
<td>.57</td>
<td>1.00</td>
<td>3.83</td>
<td>1.71</td>
<td>.54</td>
<td>1.48</td>
<td>.44</td>
<td>23.88***</td>
</tr>
<tr>
<td>Aggression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relational</td>
<td>1.34</td>
<td>.37</td>
<td>1.00</td>
<td>3.50</td>
<td>1.30</td>
<td>.34</td>
<td>1.32</td>
<td>.33</td>
<td>.48</td>
</tr>
<tr>
<td>Aggression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peer Victimization</td>
<td>.49</td>
<td>.63</td>
<td>.00</td>
<td>4.00</td>
<td>.53</td>
<td>.64</td>
<td>.40</td>
<td>.59</td>
<td>4.41**</td>
</tr>
<tr>
<td>Maternal Validation</td>
<td>3.92</td>
<td>1.37</td>
<td>1.00</td>
<td>7.00</td>
<td>3.95</td>
<td>1.28</td>
<td>4.09</td>
<td>1.42</td>
<td>1.08</td>
</tr>
<tr>
<td>Paternal Validation</td>
<td>3.97</td>
<td>1.29</td>
<td>1.00</td>
<td>7.00</td>
<td>4.02</td>
<td>1.24</td>
<td>3.99</td>
<td>1.25</td>
<td>.06</td>
</tr>
<tr>
<td>Paternal Engagement</td>
<td>4.53</td>
<td>.93</td>
<td>1.00</td>
<td>7.00</td>
<td>4.59</td>
<td>.89</td>
<td>4.67</td>
<td>.94</td>
<td>.82</td>
</tr>
<tr>
<td>Maternal Engagement</td>
<td>4.67</td>
<td>.80</td>
<td>2.00</td>
<td>7.00</td>
<td>4.69</td>
<td>.78</td>
<td>4.65</td>
<td>.83</td>
<td>.26</td>
</tr>
<tr>
<td>Maternal Valuing/Warmth</td>
<td>4.76</td>
<td>1.29</td>
<td>1.00</td>
<td>7.00</td>
<td>4.85</td>
<td>1.25</td>
<td>4.85</td>
<td>1.30</td>
<td>.01</td>
</tr>
<tr>
<td>Paternal Valuing/Warmth</td>
<td>4.95</td>
<td>1.26</td>
<td>1.00</td>
<td>7.00</td>
<td>4.96</td>
<td>1.21</td>
<td>4.89</td>
<td>1.27</td>
<td>.28</td>
</tr>
<tr>
<td>Maternal Inhibiting</td>
<td>1.63</td>
<td>1.17</td>
<td>1.00</td>
<td>7.00</td>
<td>1.65</td>
<td>1.12</td>
<td>1.57</td>
<td>1.12</td>
<td>.61</td>
</tr>
<tr>
<td>Relatedness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paternal Inhibiting</td>
<td>1.47</td>
<td>.96</td>
<td>1.00</td>
<td>7.00</td>
<td>1.44</td>
<td>.93</td>
<td>1.47</td>
<td>.92</td>
<td>.08</td>
</tr>
<tr>
<td>Relatedness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal Hostile/Devaluing</td>
<td>1.36</td>
<td>.87</td>
<td>1.00</td>
<td>7.00</td>
<td>1.34</td>
<td>.79</td>
<td>1.36</td>
<td>.91</td>
<td>.06</td>
</tr>
</tbody>
</table>

Note. *p < .05. **p < .01. ***p < .001. Degrees of freedom for univariate F tests = 1, 416.
Table 2: Bivariate correlations among observed parenting indicators

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal Validation</td>
<td>---</td>
<td>.45***</td>
<td>.40***</td>
<td>-.36***</td>
<td>-.23***</td>
<td>.23***</td>
<td>.20***</td>
<td>-.03</td>
<td>.08</td>
<td></td>
</tr>
<tr>
<td>Maternal Engagement</td>
<td>.58***</td>
<td>---</td>
<td>.46***</td>
<td>-.50***</td>
<td>-.38***</td>
<td>-.12**</td>
<td>.17***</td>
<td>.07</td>
<td>-.04</td>
<td>-.05</td>
</tr>
<tr>
<td>Maternal Valuing/Warmth</td>
<td>.48***</td>
<td>.47***</td>
<td>---</td>
<td>-.24***</td>
<td>-.29**</td>
<td>.13***</td>
<td>.21***</td>
<td>.13***</td>
<td>-.06</td>
<td>-.04</td>
</tr>
<tr>
<td>Maternal Inhibiting Relatedness</td>
<td>-.27***</td>
<td>-.41***</td>
<td>-.35***</td>
<td>---</td>
<td>.64***</td>
<td>-.14***</td>
<td>-.14***</td>
<td>-.13**</td>
<td>.06</td>
<td>.12**</td>
</tr>
<tr>
<td>Maternal Hostile Devitaling</td>
<td>-.21***</td>
<td>-.36***</td>
<td>-.34***</td>
<td>.64***</td>
<td>---</td>
<td>-.18***</td>
<td>-.13**</td>
<td>-.02</td>
<td>.06</td>
<td>.13**</td>
</tr>
<tr>
<td>Paternal Validation</td>
<td>.18***</td>
<td>.19***</td>
<td>.16***</td>
<td>-.13**</td>
<td>-.10**</td>
<td>---</td>
<td>.53***</td>
<td>.33***</td>
<td>-.38***</td>
<td>-.24***</td>
</tr>
<tr>
<td>Paternal Engagement</td>
<td>.08</td>
<td>.14***</td>
<td>.16***</td>
<td>-.11**</td>
<td>-.18**</td>
<td>.60**</td>
<td>---</td>
<td>.52**</td>
<td>-.53***</td>
<td>-.40***</td>
</tr>
<tr>
<td>Paternal Valuing/Warmth</td>
<td>.10**</td>
<td>.12**</td>
<td>.22***</td>
<td>-.16***</td>
<td>-.24**</td>
<td>.34***</td>
<td>.34***</td>
<td>---</td>
<td>-.41**</td>
<td>-.29***</td>
</tr>
<tr>
<td>Paternal Inhibiting Relatedness</td>
<td>-.13***</td>
<td>-.28***</td>
<td>-.24***</td>
<td>.22***</td>
<td>.20***</td>
<td>-.37**</td>
<td>-.47***</td>
<td>-.27**</td>
<td>---</td>
<td>.61***</td>
</tr>
<tr>
<td>Paternal Hostile/Devaluing</td>
<td>-.09</td>
<td>-.19**</td>
<td>-.10***</td>
<td>.14***</td>
<td>.10**</td>
<td>-.23**</td>
<td>-.30**</td>
<td>-.17**</td>
<td>.59**</td>
<td>---</td>
</tr>
</tbody>
</table>

Note. * p < .05. ** p < .01. *** p < .001. Correlations for girls are presented below the main diagonal. Correlations for boys are presented above the main diagonal.

These findings support the hypothesis that both maternal and paternal parenting consists of two unique, yet related, factors. Confirmatory factor analyses, described below, were deemed an appropriate means of further analyzing the factor structure underlying the parenting variables.

**Confirmatory Factor Analysis**

A confirmatory factor analysis was conducted prior to testing the structural model in order to determine the factor structure of the maternal and paternal parenting constructs. All measurement models were conducted in Mplus Version 7.11 (Muthén & Muthén, 1998-2012) using a structured means model approach to multigroup analysis for boys and girls to allow for gender differences to be examined in subsequent models. All
initial measurement models were conducted constraining factor loadings to be equal for boys and girls. First, a series of nested model comparisons were conducted to determine whether the five indices of maternal parenting style reflected a single construct (i.e., parenting quality) or two separate parenting constructs (e.g., warm and hostile parenting). In other words, a one vs. two factor model comparison was used to determine whether warm and hostile mothering were two ends of the same parenting spectrum or were better represented as two separate, albeit related, latent factors.

A one-factor confirmatory factor analysis was estimated for maternal parenting on which all observed maternal variables were used as indicators of a single latent factor with unconstrained factor loadings. The model demonstrated poor fit to the data ($\chi^2(5) = 243.64, p < .05; \text{CFI} = .80; \text{RMSEA} = .24; \text{SRMR} = .08$). Next, a two-factor CFA was estimated with two latent factors: (1) maternal warmth, as indicated by the observed constructs of validation/agreement, engagement, and valuing/warmth and (2) maternal hostility, as indicated by the observed constructs of inhibiting relatedness and hostile/devaluing. This model demonstrated good fit to the data ($\chi^2(4) = 22.86, p < .05; \text{CFI} = .98; \text{RMSEA} = .07; \text{SRMR} = .03$). Consistent with the global fit indices, a nested chi-square comparison test indicated that a two factor model was a more adequate representation of maternal parenting, $\Delta \chi^2(1) = 220.79, p < .05$.

A similar series of analyses was then conducted to examine the factor structure of the paternal parenting constructs. A one-factor confirmatory factor analysis was estimated for paternal parenting in which all observed paternal variables were used as indicators of a single latent factor with unconstrained factor loadings. The model
demonstrated poor fit to the data ($\chi^2(5) = 102.73, p < .05; \text{CFI} = .84; \text{RMSEA} = .20; \text{SRMR} = .06$). Next, a two-factor CFA was estimated with two latent factors: (1) *paternal warmth* as indicated by the observed constructs of validation/agreement, engagement, and valuing/warmth and (2) *paternal hostility*, as indicated by the observed constructs of inhibiting relatedness and hostile/devaluing. This model demonstrated good fit to the data ($\chi^2(4) = 2.26, p = \text{ns}; \text{CFI} = 1.00; \text{RMSEA} = .00; \text{SRMR} = .01$). Consistent with the global fit indices, a nested chi-square comparison test indicated that a two factor model was a more adequate representation of paternal parenting, $\Delta \chi^2(1) = 100.47, p < .05$.

Next, invariance in the factor loadings within their respective constructs was examined using nested chi-square comparison test. This test allows us to examine whether the observed variables load equally on to their respective latent constructs, allowing for a more straight forward interpretation of the meaning of the latent construct itself. Specifically, two confirmatory factor analyses were estimated and compared. In the first model, the factor loadings of the indicators of the four latent constructs described above (i.e., maternal warmth, maternal hostility, paternal warmth, paternal hostility) were freely estimated (e.g., allowed to differ within their respective constructs). In the second model, the factor loadings of the indicators were fixed to be equal to each other within their respective latent factors. A chi-square difference test indicated that fixing the factor loadings to be equal within each latent factor did not significantly diminish the overall fit of the measurement model, $\Delta \chi^2(2) = 1.62, p = \text{ns}$. Thus, for the sake of parsimony and interpretation, a final measurement model was retained with four latent factors reflecting maternal warmth, maternal hostility, paternal warmth, and paternal hostility, with item
loadings constrained to be equal within each factor. Indeed, this model demonstrated good fit to the data, \(\chi^2(72) = 88.20, p = \text{ns}; \ CFI = .99; \ \text{RMSEA} = .02; \ \text{SRMR} = .05\).

All items in the final measurement model loaded significantly and positively on their respective latent constructs. Unstandardized factor loadings and standard errors are presented in Figure 1. The first item loading in each factor was fixed to 1.00 by default to set the variance of the latent factor itself.

It should be noted that efforts were made to examine multigroup invariance among the identified latent factors for male and female children (i.e., the structure of the measurement model for mothers’ interactions with boys vs. girls and fathers’ interactions with boys vs. girls). A comparison model in which the factor loadings were freely estimated for boys and girls was run but unfortunately did not converge due to the number of estimated parameters. Given that there is no theoretical reason to expect the structure of the measurement model to differ for boys or girls, analyses went forward assuming structural invariance. However, this should be considered as a future direction in subsequent research.

**Gender Differences in Latent and Observed Variables**

A multivariate analysis of variance was also conducted to determine whether there were significant gender differences in the means of the three aggression variables, peer victimization and observed parenting variables. A significant multivariate effect was found demonstrating that boys and girls differed on the linear combination of these variables, \(F(14, 403) = 3.03, p < .05\). Follow-up univariate analyses indicated that boys
had significantly higher levels of reactive overt aggression, \( F(1, 416) = 23.88, p < .05 \), and peer victimization, \( F(1, 416) = 4.41, p < .05 \), than girls.

Figure 1. Standardized items loading for the confirmatory factor analysis for maternal and parental parenting styles.

\[ ***p < 0.001 \]
No significant differences emerged between boys and girls in the latent variable means of the four parenting factors (unstandardized mean differences ranged from -.02 to .10, all $ps = ns$).

**Correlations among Latent and Observed Variables**

Significant correlations were found among the four latent study variables and youth’s reports of aggression and peer victimization (see Table 3). Correlations are presented separately for boys and girls.

For all children, significant correlations emerged among the latent parenting constructs in the expected directions (e.g., positive correlations among similar constructs, negative correlations between warmth and hostility). Somewhat surprisingly, maternal warmth and paternal hostility were significantly and negatively correlated only among girls, but not boys.

Significant correlations also were found between parenting and peer victimization among both boys and girls, but only for the latent constructs representing maternal parenting style (i.e., maternal warmth and maternal hostility). Specifically, as expected, higher maternal warmth was associated with lower levels of peer victimization, whereas greater maternal hostility was associated with higher rates of victimization.

Significant associations also emerged between parenting style and the various forms of peer-directed aggression. For example, hostile parenting, both from mothers and fathers, was positively associated with relational aggression, but was not associated with either form of overt aggression. In addition, *paternal* warmth was negatively correlated with relational aggression, whereas *maternal* warmth was negatively correlated with
reactive overt aggression, but only for boys. No significant correlations emerged between parenting and instrumental overt aggression for either boys or girls.

Finally, all forms of aggression were significantly and positively correlated with peer victimization, though the pattern of correlations differed for boys and girls. Specifically, peer victimization was positively correlated with all forms of aggression among boys, but was only correlated with instrumental overt aggression among girls.

Table 3 Bivariate Correlations among latent parenting constructs and observed study variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Maternal Warmth</td>
<td>---</td>
<td>-.67***</td>
<td>.31***</td>
<td>-.07</td>
<td>-.11**</td>
<td>-.07</td>
<td>-.10*</td>
<td>-.04*</td>
</tr>
<tr>
<td>2. Maternal Hostility</td>
<td>-.35***</td>
<td>---</td>
<td>-.20***</td>
<td>.06*</td>
<td>.11**</td>
<td>.13**</td>
<td>.07</td>
<td>.03</td>
</tr>
<tr>
<td>3. Paternal Warmth</td>
<td>.23***</td>
<td>-.20***</td>
<td>---</td>
<td>-.67***</td>
<td>.00</td>
<td>-.09*</td>
<td>.03</td>
<td>.01</td>
</tr>
<tr>
<td>4. Paternal Hostility</td>
<td>-.33***</td>
<td>.38***</td>
<td>-.58***</td>
<td>---</td>
<td>-.03</td>
<td>.09*</td>
<td>.01</td>
<td>.00</td>
</tr>
<tr>
<td>5. Peer Victimization</td>
<td>-.10*</td>
<td>.09*</td>
<td>.01</td>
<td>-.02</td>
<td>---</td>
<td>.21***</td>
<td>.14***</td>
<td>.22***</td>
</tr>
<tr>
<td>6. Relational Aggression</td>
<td>-.05</td>
<td>.12**</td>
<td>-.09*</td>
<td>.16**</td>
<td>.06</td>
<td>---</td>
<td>.01</td>
<td>.00</td>
</tr>
<tr>
<td>7. Reactive Overt Aggression</td>
<td>-.18*</td>
<td>.10**</td>
<td>-.05</td>
<td>.06</td>
<td>.08</td>
<td>.01</td>
<td>---</td>
<td>.55***</td>
</tr>
<tr>
<td>8. Instrumental Overt Aggression</td>
<td>-.08**</td>
<td>.94</td>
<td>-.02</td>
<td>.03</td>
<td>.10*</td>
<td>.00</td>
<td>.50***</td>
<td>---</td>
</tr>
</tbody>
</table>

Note. * p < .05. ** p < .01. *** p < .001. Correlations for girls are presented below the main diagonal. Correlations for boys are presented above the main diagonal.

Structural Associations Among Parenting, Aggression, and Peer Victimization

A structural equation model was estimated in Mplus Version 7.11 (Muthén & Muthén, 1998-2012) to examine the associations among parenting, aggression, and peer victimization.
victimization. To avoid multicollinearity among the mediating variables of interest and provide a more sensitive test of the different forms of aggression, separate models were estimated for instrumental overt, reactive overt, and relational forms of aggression.

The structure of the model was created to specifically assess (1) the predictive associations between parenting and children’s social adjustment (i.e., aggression and peer victimization) and (2) the potential for aggressive behavior to mediate the association between parenting and peer victimization. Specifically, all four latent parenting variables (as described in the measurement model above) were simultaneously included as predictors of peer victimization and aggressive behavior. In addition a path was included predicting victimization from aggression. A series of nested model comparisons were used to determine whether the associations among the study variables differed as a function of children’s gender. Results are presented in the sections below by model.

**Associations among Parenting, Instrumental Overt Aggression, and Peer Victimization.** The first set of structural equation models were estimated with instrumental overt aggression as a potential mediator with the link between parenting and victimization. To examine potential gender differences, two nested models were estimated. In the first model all structural paths were constrained to be equal for boys and girls. This model was compared to an identical model in which all paths were freely estimated for boys and girls. A chi-square comparison indicated that freeing the paths did not significantly improve the overall fit of the model (Δχ²(9) = 12.33, p = ns). Thus the fully constrained model was retained; this model evidenced good fit (χ²(105) = 124.74, p = ns; CFI = .99; RMSEA = .02; SRMR = .05).
Fully standardized path estimates are presented in Figure 2. None of the four latent parenting factors were significant predictors of instrumental overt aggression or peer victimization. Instrumental overt aggression was a significant and positive predictor of peer victimization.
Figure 2. Associates among parenting, instrumental overt aggression and peer victimization. Unstandardized path estimates presented first and standard errors are presented in parentheses

* p < 0.05. All pathways are constrained to be equal for boys and girls

Associations among parenting, reactive overt aggression, and peer victimization. The second set of structural equation models were estimated with reactive overt aggression as a potential mediator with the link between parenting and victimization. To examine potential gender differences, two nested models were estimated (see Figure 3). In the first model all structural paths were constrained to be equal for boys and girls. This model was compared to an identical model in which all
paths were freely estimated for boys and girls. A chi-square comparison indicated that freeing the paths did not significantly improve the overall fit of the model ($\Delta \chi^2(9) = 11.83, p = \text{ns}$). Thus the fully constrained model was retained; this model evidenced good fit ($\chi^2(105) = 126.619, p = \text{ns}; \text{CFI} = .99; \text{RMSEA} = .02; \text{SRMR} = .05$).

Figure 3. Associations among parenting, reactive overt aggression, and peer victimization. Unstandardized paths are presented first and standard errors are presented in parentheses.

* $p < .05$, *** $p < .001$. All paths are constrained to be equal for boys and girls.
Paternal hostility emerged as a significant and positive predictor of reactive overt aggression; however, no other predictive associations emerged between parenting and reactive overt aggression. Reactive overt aggression was, in turn, a significant and positive predictor of peer victimization.

**Associations among parenting, relational aggression, and peer victimization.** The third set of structural equation models were estimated with relational aggression as a potential mediator with the link between parenting and victimization. To examine potential gender differences, two nested models were estimated. In the first model all structural paths were constrained to be equal for boys and girls. This model was compared to an identical model in which all paths were freely estimated for boys and girls. A chi-square comparison indicated that freeing the paths did significantly improve the overall fit of the model ($\Delta \chi^2(9) = 25.36, p < .05$). To determine the specific nature of the gender difference(s), the fully constrained model was compared to a series of models in which each individual structural path was freely estimated for boys and girls. The only path whose free estimation significantly improved the fit of the model was the path from relational aggression to peer victimization ($\Delta \chi^2(1) = 17.69, p < .05$). Thus the final retained model was estimated with all structural paths constrained to be equal, with the exception with the path from relational aggression to victimization; this model evidenced good fit ($\chi^2(104) = 125.37, p = ns; CFI = .99; RMSEA = .02; SRMR = .05$).

Maternal hostility emerged as a significant and positive predictor of relational aggression; however, no other latent parenting variables were significant predictors of aggression or peer victimization in this model. Relational aggression, in turn, emerged as
a significant and positive predictor of peer victimization for both boys and girls, though this path was significantly stronger for boys than for girls (Wald test of parameter constraint = 17.86, df=1, \( p < .001 \)).

Figure 4. Associations among parents, relational aggression, and peer victimization. Unstandardized path estimates are presented first and standard errors are presented in parentheses.

\* \( p < .05 \); \*** \( p < .001 \). All paths are constrained to be equal for boys and girls unless otherwise indicated.
**Statistical Mediation**

Finally, an indirect effect was specified to examine whether relational aggression significantly mediated the association between maternal hostility and peer victimization. In addition to the estimate of the indirect effect, bias corrected bootstrapping was used to generate a 95% confidence interval around the indirect effect. A confidence interval that does not include zero provides further evidence of a statistically significant result. The standardized indirect effect for girls was equal to .016 (se = .01, \( p = \text{ns} \)) with a 95% confidence interval ranging from -.001 to .032. The standardized indirect effect for boys was equal to .053 (se = .023, \( p < .05 \)) with a 95% confidence interval ranging from .016 to .090. These findings indicate that relational aggression significantly mediated the association between hostile mothering and victimization for boys, but not for girls.
DISCUSSION

The goal of the current study was to examine both the direct and indirect associations between maternal and paternal parenting style and adolescents’ experiences with peer victimization. The findings of the study speak to the importance of parenting on the social behavior and relationships of youth beyond childhood and provide preliminary evidence that the link between parenting, particularly hostile mothering, and peer victimization may be in part accounted for by adolescents’ use of relationally aggressive behaviors. These findings are important and will help build theoretical models of parental socialization and the influence it has on children’s own interactions with their peers. Further, these findings may have implications for the development and enhancement of current and future intervention/prevention strategies.

Types of Parenting
As anticipated, the current study found evidence for two forms of parenting behavior that were consistent across both mothers’ and fathers’ interactions with their adolescent children. These parenting constructs consisted of interactions characterized by high levels of warmth (i.e., parental validation/agreement, engagement, valuing/warmth) and interactions characterized by high levels of hostility (i.e., hostility/devaluing, inhibiting relatedness). Consistent with prior theoretical models of parenting behaviors (e.g., Baumrind, 1971), warm and hostile parenting were found to represent separate
(albeit related) axes, rather than opposite ends of a single spectrum. In other words, it is possible for parents to engage in high levels of both warmth and hostility. This is an important distinction both psychometrically and in statistical modeling, as well as in the manner in which we conceptualize the effects of parenting. For example, the current study found unique effects for maternal hostility and higher rates of self-reported peer victimization, controlling maternal and paternal warmth and paternal hostility. These effects may have been masked or underrepresented if the constructs of parenting were modeled on a positive-to-negative scale. Similarly, although the current study modeled the parenting dimensions from a variable-centered approach, future studies may benefit from examining unique classifications of parenting as a function of combined scores on warmth and hostility or to incorporate hostility as an important dimension in the commonly identified parenting typologies (e.g., authoritarian/authoritative typology, Baumrind, 1971).

**Associations between Parenting and Adolescents’ Social Behavior**

In addition to identifying the latent parenting constructs represented by NICHD’s observations for parents’ interactions with adolescents, significant associations were found between parenting and youths’ peer victimization. Indeed, for both boys and girls, significant correlations were found among the maternal latent study variables (warmth and hostility) and youth’s reports of peer victimization (see Table 3). In general, the link between parenting and peer victimization has been well substantiated in previous literature. For example, children whose parents engage in overly controlling or harsh disciplinary strategies, such as those with the authoritarian parenting style, show an
increased likelihood of reporting peer victimization (Swearer & Doll, 2001).

Furthermore, instances with children of parents with a history of involvement with child protective services (CPS) also experience higher rates of victimization (Mohapatra, et al., 2010). Although the reasons for this association have received little empirical attention, Carrera, DePalma, and Lameiras (2011) suggest that some children nurture a victim mentality. This was further expanded upon by Swearer, Espelage, Vaillancourt, and Hymel (2010), who suggested that parenting styles and attachment models connect parent-child interactions and victimization. Perhaps parenting styles that obstruct autonomy or are particularly harsh may prevent children from learning how to stand up, protect themselves, resolve disputes, and may have problems with conflict resolution (Carrera, DePalma, & Lameiras, 2011). Importantly, the direct association between parenting and victimization was not present in the structural equation models, perhaps due to the inclusion of the indirect effect of aggressive behavior. However, the correlation between parenting and victimization provided the basis for examining more complex, mediated pathways, as discussed below.

The findings of the current study also suggest that hostile parenting strategies may result in the transmission of behaviors that put youth at greater risk for victimization, including peer-directed aggression. Indeed, parenting styles emerged in the current study as predictors of youths’ aggressive behavior. In addition to numerous significant correlations among parenting and aggression, the results of the structural equation models indicated that paternal hostility predicted greater reactive overt aggression while maternal hostility predicted greater relational aggression. These associations can be explained by
Bandura’s (1973) social learning theory, which stipulates that children model behavior displayed by their adult role models. Parents who engage in hostile interactions with their children may serve as models, sending messages to their children that hostile and aggressive social behaviors are not only acceptable, but also an effective means of interacting with others. A covertly aggressive parent may manipulate social interactions, teaching their child that aggressively manipulating peers can be rewarding.

The inconsistent finding across the three forms of aggressive behavior also highlight the need to treat peer aggression as a set of unique behaviors rather than a single homogenous construct. This is important given the variability in the way aggression manifests during adolescence. For example, most children show improvements in social skills (Eisenberg, Fabes, and Spinrad, 1998) and declines in impulsivity (Fossati, Coyette, Ergis, & Allilaire, 2002; Wittmann & Paulus, 2008) as they lead up to adolescence. It is possible, therefore, that adolescents who continue to be aggressive are doing so either (a) in more sophisticated ways, including covert forms of relational aggression or (b) in ways that reflect developmental deficits in emotion and behavior regulation, including reactive forms of overt aggression. Overt forms of instrumental, goal-directed aggression may become less common during the transition to adolescence, as youth either remain reactive or transition to covert (and more socially acceptable) forms of aggressive behavior. Consistent with this, Murray-Close, Ostrov, and Crick (2007) identified increases in relationally aggressive behaviors over the course of a calendar year, particularly among girls, whereas Brame and colleagues (2001) found a subset of youth who increasingly engage in physical aggression. The findings presented in the current study may suggest
that parenting can have a notable influence on the already-changing landscape of adolescents’ social behaviors, particularly with regards to forms of aggression that may be developmentally predisposed to change or growth at this age. Future longitudinal studies are needed to better understand how parenting styles may impact trajectories of growth and change in aggression over the course of adolescence.

Although all forms of aggression consistently predicted greater peer victimization, differences were found in the specific links between parenting and aggression. These differences may reflect the modeling of gender-typical aggressive behaviors and highlight the unique effect of maternal and paternal interactions with youth. Specifically these associations may be attributable to the common gender differences found across the distinct forms of aggressive behavior (Bjorkqvist, Lagerspetz, & Kaukianen, 1992; Crick, Casas, & Mosher, 1999; Galen & Underwood, 1997; Henington, Hughes, Cavell, & Thopson, 1999; Tomada & Schneider, 1997) as well as the differences in the way mothers and fathers may portray (and therefore model) a hostile interaction style.

When combined with the consistent link between aggression and victimization, the significant association between maternal hostility and relational aggression resulted in a mediated pathway such that maternal hostility predicted greater peer victimization via higher levels of relational aggression. Research has previously suggested that indirect pathways may exist linking parenting and adolescents’ social interactions with peers (Brown et al., 1993), however little evidence exists to describe these specific mediating processes. The current study focused on youths’ aggressive behavior, given that aggression is an accepted risk factor for peer victimization (Schwartz, 2000; Schwartz,
Proctor, & Chien, 2001) and has been consistently linked to family processes (Crick & Dodge, 1994; Hart, et al., 1998; Werner & Crick, 1999). The mediated link between maternal hostility and peer victimization suggests that youths’ hostile interactions with their mothers may influence the behavioral interaction style of adolescents in ways that put them at greater risk for negative experiences with, and treatment from, their peers. This is an important finding in that this is one of the first studies to provide evidence of behavioral factors that may link teens’ social experiences in the unique contexts of home and peers. Findings suggest that relational forms of aggression may be more likely than overt forms of aggression to cross these contextual boundaries, being modeled in the home and expressed among peers. While the current study examined adolescent youth, prior research with young children has indicated that aggressive mothers may model relationally aggressive behaviors (Stauffacher, 2011). Perhaps youth view relational forms of aggression as more generalizable or efficacious in multiple social contexts. Indeed, relational aggression is often viewed as more justifiable or less harmful (Murray-Close, Crick, & Galotti, 2006). Similarly, adolescents believe that negative reactions from friends and family members in response to relational acts of aggression are less justified than negative responses to physical forms of aggression (Goldstein, Tisak, & Boxer, 2002). In other words, children may be socialized to believe that peers and adults view relational aggression as less harmful and punishable than physical forms of aggression. These beliefs may make relational aggression a more accessible behavior than other forms of aggression that have been learned in the home. Although the significant associations among all forms of aggression and victimization that were found
in the current study suggest that this is not necessarily true (i.e., all forms of aggression were associated with greater victimization), these beliefs may point to one way that relational aggression may be more aptly transmitted from parenting modeling to peer interactions than overtly aggressive behaviors. Future research will benefit from examining other behavioral, as well as emotional and cognitive factors, that can help to explain the other links between parenting and victimization that remain unexplained in the current study.

**Gender differences in the Indirect Effect of Parenting on Victimization**

Interestingly, the indirect effect of relational aggression on the link between maternal hostility and peer victimization was only significant for boys, but not girls. This gender difference is likely due to the difference in strength of the link between relational aggression and peer victimization. In particular, although relational aggression significantly predicted greater peer victimization for both boys and girls, this association was significantly stronger for boys. As a result, the indirect effect between maternal hostility, relational aggression, and peer victimization only reached marginal significance for girls. As some researchers have found that boys tend toward overt aggression (Coie, Dodge, & Kupersmidt, 1990; Parker & Asher, 1987), whereas girls tend toward relational aggression (Bjorkqvist, Lagerspertz, & Kaukiainen, 1992), this finding suggests that when boys behave in a manner that violates both general social norms (e.g., aggressive behavior) and gender norms (e.g., relational aggression), they may be at even greater risk for becoming target of peer victimization.
Implications for Intervention

The findings from the current study have notable implications for both formal and informal intervention efforts. A multitude of school-based programs have been designed with the intention of reducing peer victimization and peer-directed aggression and a recent review of anti-bullying interventions found that parent training was one of the most important aspects at reducing victimization (Ttofi & Farrington, 2009). Much of the information in the studies examined by Ttofi and Farrington lacked specific details on what message was being given to parents within the home. Although multi-systemic interventions are considered the gold standard for bullying prevention, a lack of research on the indirect effects of parenting on peer relationships makes it difficult to determine the specific parenting and behavioral factors on which to target intervention efforts. Identifying the important ways in which parenting behaviors are transmitted to the peer realm may help harness the powerful effects of parent-focused intervention components in antibullying programs.

In addition, the current study emphasizes the fact that parenting in general, not just parents’ efforts to teach adolescents about interacting with peers, may influence youths’ relationships with agemates. This suggests that while it will remain to be important to teach parents how to assist their child when victimized, there is much still needed to be learned about how to help parents engage in positive, constructive interactions with their teenage children in general. Discouraging (and avoiding the modeling of) overt, relational aggression may, in particular, be an important target for future parenting interventions. It is well established that covert forms of aggression are more difficult to witness, and therefore making it more difficult to condition people to
refrain from aggressive behavior. When an adolescent reaches adulthood they may already have years of experience mastering relational aggression. This type of hostility can therefore translate to their adult interactions (Linder, Crick, & Collins, 2002), and even show up with how they manage their family (Nelson & Crick, 2002).

**Limitations**
A number of notable limitations exist in the current study. The most substantial limitation is the cross-sectional nature of the study. Although the NICHD SECCYD study is longitudinal in nature, the intention of the current study was to examine the link between parenting and victimization during adolescence. As such, the data available was limited to a single measurement point. This creates challenges in that it limits the ability to understand time-related information or the sequential order of events across adolescence. The inability to examine longitudinal associations limits the conclusions we can make about the long-term associations between parenting, aggression, and victimization. Furthermore, it is difficult to tell from cross-sectional data whether the direct and mediated relationships between maternal hostility and victimization are most notable during adolescence. There may be other developmental points, whether earlier or later in life, during which paternal hostility has an equally important influence on children’s peer relationships. Further, we are limited in understanding whether these influences are time-limited or if they have lasting effects on youths’ social adjustment. Future studies would benefit from examining the extent to which the effects of parent-adolescent interaction quality continue to impact children’s social relationships into adulthood, including their own manner of parenting. Is it possible that this is cyclical in
nature? Do these adolescents grow up modeling relationally aggressive behavior for their future teens? Future longitudinal studies will be essential in understanding these complex questions.

An additional limitation for the current study is the use of a single composite score for peer victimization. As mentioned above, aggression and victimization can occur in a number of different ways. Although participants were asked to report about four distinct types of victimization, data was only available at the composite level. This prevents our ability to ask important questions about the differential effects of parenting on unique forms of victimization and whether the mediating effects of aggressive behavior are consistent across all types of victimization.

Finally, the current study was limited in that, although it is one of few studies to include reports of fathers’ interactions with their children, many of the adolescent participants did not have data on paternal parenting style. Given that full family data (i.e., measures of both maternal and paternal parenting) were not consistently available for each adolescent, analyses could not be conducted in a nested design. It is also possible that perhaps parenting strategies, youths’ behavioral patterns, and other constructs that were central to the research question of the current study may have varied for the families without father participation. It has been shown that aversive situations predict greater attrition rates (Davis & Addis, 1999), in particular when it pertains to social competence and familial interactions (Weinberger, Tublin, Ford, & Feldman, 1990).
Conclusion

In summary, peer victimization is a topic that garners a lot of attention, much of which is focused on how factors that put youth at greater risk of becoming the target of aggression. The association between parenting and peer victimization is an important one, though the nature of the associations between teens’ interactions with their parents and the manner in which they are treated by peers has been largely unaddressed. This study took on the task of examining aggressive behavior as one potential mechanism linking parenting and peer victimization in adolescence and provides initial evidence that relational aggression may be an important factor in this association. While some interventions already target familial influences on peer victimization, few of these factors are integrated into intervention efforts (Ttofi & Farrington, 2009). This study suggests that interventions should be aware of the concerns surrounding hostile parenting behaviors, along with the impact relational aggression has on making teens a risk for peer victimization (especially boys). It is recommended that further attention must be made on how to address relational aggression, in both boys and girls, and how to change behaviors within the home, as to avoid modeling hostile, aggressive behavior for children.
REFERENCES


NICHD Early Child Care Research Network [ECCRN], 2004


Parent–Child Interaction Scales: Middle childhood. Unpublished manuscript, University of Texas at Dallas.

Parke, R. D., MacDonald, K., Burks, V. M., Carson, J., Bhavnagri, N., Barth, J., & Beitel, (1989). Family and peer systems: In search of the linkages. In K.


Cicchetti & D. Cohen (Eds.), Developmental Psychopathology, Vol. 2: Risk, disorder, and adaption (pp. 96-161). New York: Wiley.


BIOGRAPHY

Max Shear grew up in Detroit, MI. He received a bachelor’s degree in Psychology and Fine Art: Photography from Wayne State University. He is currently a student at George Mason University.