BERDAN, LOUISE E., Ph.D. Emotional Reactivity, Aggression, and Peer Liking: The Roles of Gender and Maternal Socialization of Negative Emotions. (2009) Directed by Dr. Susan P. Keane. 118 pp.

The purpose of study 1 was to explore the interaction between emotional reactivity and maternal socialization of anger as it predicts physical and relational aggression. Gender differences in this relation were hypothesized and explored. Participants included 365 children evaluated at kindergarten and second grade assessments. For boys, high emotional reactivity and low maternal distress predicted the highest level of physical aggression. The opposite relation was found when predicting boys' relational aggression. Namely, high emotional reactivity and high maternal distress predicted the highest level of relational aggression. In contrast, emotionally reactive girls displayed the highest level of relational aggression in the context of high maternal minimization of anger. No relations emerged for girls' physical aggression. The goal of study 2 was to extend findings from study 1 by looking at peer implications related to aggressive behaviors. In particular, two separate gender-specific mediated moderation pathways were hypothesized and confirmed. For boys, the following pathway emerged: Emotional Reactivity × Distress Reactions → Physical Aggression → Low Peer Liking. For girls, the following pathway emerged: Emotional Reactivity × Minimization Reactions → Relational Aggression → Low Peer Liking.

EMOTIONAL REACTIVITY, AGGRESSION, AND PEER LIKING:

THE ROLES OF GENDER AND MATERNAL SOCIALIZATION

OF NEGATIVE EMOTIONS

by

Louise E. Berdan

A Dissertation Submitted to
The Faculty of The Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

Greensboro

2009

Approved by

_____
Committee Chair

APPROVAL PAGE

This dissertation has been approved by the following committee of the Faculty of The

Graduate School at The University of North Carolina at Greensboro.

Committee Chair _____

Committee Members _____

_____

_____

_____
Date of Acceptance by Committee

_____
Date of Final Oral Examination

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

STUDY 1: INTRODUCTION

Considerable research has shown that early aggressive behaviors predict a range of maladaptive outcomes including delinquency, violent juvenile behavior (Hinshaw, 2002), substance abuse, sexual risk behavior (Prinstein & La Greca, 2004), peer difficulties (Campbell, Spieker, Burchinal, Poe, & The NICHD Early Child Care Research Network, 2006; Schwartz, Gorman, Nakamoto, & McKay, 2006), internalizing problems (Campbell et al., 2006), and academic problems (Campbell et al., 2006; Loveland, Lounsbury, Welsh, & Buboltz, 2007; Schwartz et al., 2006). Moreover, childhood-onset of persistent aggressive behaviors tends to be more strongly associated with maladaptive outcomes compared to aggressive and antisocial behaviors occurring primarily in the adolescent years (Campbell et al., 2006; Moffitt, 2003). The severity of many of these outcomes makes the study of predictors of aggression particularly relevant as this research can aid with early detection and prevention of aggressive behaviors.

Although definitions vary (Underwood, 2003), aggression is often thought to involve two features: anger and the intent to harm (Crick, Bigbee, & Howes, 1996; Eagly & Steffen, 1986). Given this broad definition of aggression, there are many behaviors that constitute aggression. For example, aggression can be physical in nature, including behaviors such as biting, hitting, kicking, and punching. Aggression can also be verbal, including acts such as yelling insults and mocking someone. The construct of aggression

1

has been dissected in many different ways to examine specific predictors, correlates, and outcomes of these various types of aggressive behaviors. Recently highlighted in the literature is the distinction between physical and relational aggression (Crick 1997; Crick, Werner, Casas, O-Brien, Nelson, Grotpeter, & Markon, 1999; Park, Essex, Zahn-Waxler, Armstrong, Klein, Goldsmith, 2005; Prinstein, Boergers, & Vernberg, 2001). As the name implies, physical aggression is defined as a physical act of harm inflicted on another person, such as hitting (Crick, 1997). In contrast, relational aggression involves manipulation or control of relationships with others to inflict harm (Crick & Grotpeter, 1995). This covert type of aggression includes behaviors such as ignoring someone to exclude them from the peer group, spreading rumors, gossiping, and telling another child "I won't be your friend anymore" (Crick & Grotpeter, 1995). Physical damage is the vehicle of harm for physical aggression, whereas the relationship is the vehicle of harm for relational aggression (Crick, 1997). Similar to physical aggression, relational aggression is associated with the development of a range of maladaptive psychosocial outcomes (Cillessen & Mayeux, 2004; Crick, 1996; Crick, 1997) and has been found to be a precursor of physical aggression among adolescent girls (Talbott, Celinska, Simpson, & Coe, 2002).

With respect to physical aggression, there is a large body of research to support a range of environmental and biological predictors. Negative parenting behaviors such as lack of maternal warmth, negative control, lack of support, unresponsiveness, and negativity reliably predict physical aggression in young children (Campbell, 1997; Campbell, Pierce, Moore, Marakovitz, & Newby, 1996; Campbell, Shaw, & Gilliom,

2000; Rubin, Burgess, Dwyer, & Hastings, 2003). Studies examining the influence of temperament on adjustment consistently find modest direct effects of early temperament dimensions such as negativity, resistance to control, and activity level on the display of externalizing behaviors, including aggression, at later ages (Bates, Bayles, Bennett, Ridge, & Brown, 1991; Calkins & Degnan, 2006; Caspi, Henry, McGee, Moffitt, & Silva, 1995; Prior, Smart, Sanson, Pedlow, & Oberklaid, 1992; Shaw, Owens, Giovannelli, & Winslow, 2001). Individual cognitive factors, such as hostile attribution biases, have also been associated with the development of physical aggression (Crick, Grotpeter, & Bigbee, 2002). These cognitive factors likely influence functioning in the peer domain. As such, early peer rejection predicts growth in aggression during early and middle childhood (Dodge, Lansford, Burks, Bates, Pettit, Fontaine, & Price, 2003). Taking these findings together, a biopyschosocial model has been used to explain the development of aggression. The interaction between environmental and biological factors is thought to provide the best measurement of risk for aggression (Dodge & Pettit, 2003). Consistent with this model, Brennan and colleagues found that biological risk—indexed by perinatal and birth complications, maternal illness during pregnancy, child temperament problems, and low vocabulary scores—interacted with social risk—indexed by poor parenting practices, low maternal education, exposure to poverty, and a high number of family transitions—to predict early-onset persistent aggression (Brennan, Hall, Bor, Najman, & Williams, 2003).

Relatively less empirical and theoretical research is available on the early predictors of relational aggression; however, similar predictors as those shown to predict

physical aggression have started to be examined. For example, Nelson and Crick (2002) found that fathers' psychological control was related to their daughter's relational aggression, whereas mothers' use of physical discipline was related to their son's relational aggression. Evidence of gender effects was found such that having a less inhibited temperament and exposure to paternal depressive symptoms resulted in higher levels of relational aggression for girls only (Park et al., 2005). Relational aggression has also been associated peer difficulties including lower peer acceptance (Cillessen & Mayeux, 2004; Crick, 1996), fewer prosocial behaviors (Crick, Casas, & Mosher, 1997), and friendships characterized by more exclusivity and jealousy (Grotpeter & Crick, 1996; Parker, Low, Walker, & Gamm, 2005). Similar to physical aggression, hostile attributions in response to relational provocations were related to relational aggression (Crick et al., 2002).

Although there is evidence for similar precursors of physical and relational aggression, relational aggression has been primarily labeled as a female phenomenon (Underwood, 2003). Despite this assertion, research finding on gender differences in relational aggression are mixed (Underwood, 2003). Some studies have found girls to be more relationally aggressive than boys (Crick, 1995; Crick et al., 2002; Loukas, Paulos, & Robinson, 2005; Rys & Bear, 1997), some have found no gender differences (Bosacki, 2003), and some have found boys to be more relationally aggressive than girls (David & Kistner, 2000; Henington, Hughes, Cavell, & Thompson, 1998; Tomada & Schneider, 1997). A closer look at the reporter, age of the sample, and consideration of co-occurring physical aggression help to sort through inconsistencies.

Using peer estimation methods, Bjorkqvist and colleagues have consistently found no gender differences in relational aggression prior to age 11 (Bjorkqvist, Lagerspetz, & Kaukiainen, 1992; Bjorkqvist, Osterman, & Kaukiainen, 1992). These findings suggest that across all severity levels of relational aggression (i.e., children who use relational aggression often and children who occasionally use relational aggression) there are no gender differences prior to age 11. Consistent with the peer estimation method, studies examining continuous, peer-nominated relational aggression also find no gender differences in relational aggression (Rys & Bear, 1997; Zimmer-Gembeck, Geiger, & Crick, 2005). In contrast, studies examining extreme categories (i.e., one standard deviation above the mean) of peer-nominated relational aggression find that girls are more relationally aggressive than boys (Crick, 1995; Crick et al., 1996; Crick et al., 2002; Crick & Werner, 1998; Loukas et al., 2005; Rys & Bear, 1997).

The consideration of co-occurring physical aggression can help to reconcile the discrepant findings between continuous and categorical measures of relational aggression. That is, studies examining extreme categories of relational aggression also include the child's level of physical aggression when comprising categories. Therefore, the following categories are created: high physical aggression/low relational aggression, high physical aggression/high relational aggression, low physical aggression/high relational aggression, and low physical aggression/low relational aggression. Examination of these categories reveal that girls mostly comprise the low physical aggression/high relational aggression category and boys mostly comprise the high physical aggression/high relational aggression category (Crick, 1995; Crick et al., 1996;

Crick et al., 2002; Crick & Werner, 1998; Loukas et al., 2005; Rys & Bear, 1997).

Therefore, relationally aggressive boys are also more likely to be physically aggressive,

whereas relationally aggressive girls are not necessarily high on physical aggression

(Crick, 1995; Crick et al., 1996; Crick et al., 2002; Crick & Werner, 1998; Loukas et al.,

2005; Rys & Bear, 1997).   Moreover, girls consistently engage in relational aggression

more often than physical aggression (Crick et al., 1997; Cairns, Cairns, Neckerman,

Ferguson, & Gariepy, 1989). Given the differing patterns of relational and physical

aggression among girls and boys, it is important to understand how and why these

behavior patterns develop and whether there are gender differences in the developmental

pathways. Factors that lead to these gender specific patterns, and in particular girls'

patterns of aggression, are not particularly well understood. Using the biopsychosocial

model outlined by Dodge and Pettit (2003), examination of both biological and

environmental factors may facilitate our understanding of gender differences in

aggression. Emotional reactivity—considered a biologically based characteristic

(Rothbart & Bates, 2006)—and maternal socialization of emotions—an environmental

factor—are two factors with theoretical and empirical support for furthering our

understanding of boys' and girls' development of physical and relational aggression.

Emotional Reactivity

Expression and management of emotions have a long history of being implicated

in the development of adaptive and maladaptive behavior patterns in childhood. Well-

developed emotional regulation skills and effective management of negative affect can

support a child in the development of adaptive behaviors including better social skills,

greater peer acceptance, more cooperative play, and greater sympathy (Calkins, Gill, Johnson, & Smith, 1999; Eisenberg, Fabes, Shepard, Murphy, Guthrie, Jones, et al., 1997; Eisenberg, Liew, & Pidada, 2004; Maszk, Eisenberg, & Guthrie, 1999). Conversely, several studies have concluded that the display of negative emotions and emotion regulation difficulties predict behavior problems, lower social competence, and lower peer acceptance (Eisenberg, Fabes, Bernzweig, Karbon, Poulin, & Hanish, 1993; Eisenberg et al., 1997; Eisenberg, Losoya, Fabes, Guthrie, Reiser, Murphey, et al., 2001; Maszk et al., 1999).

Research on emotions has commonly focused on two variables that impact a child's level of emotional arousal: emotional reactivity and emotion regulation (Eisenberg, Fabes, Carlo, & Karbon, 1992). According to Rothbart and Bates (2006) reactivity and regulation are a core component of a child's biologically based temperament. Reactivity is defined as responsiveness to change in the environment, whereas regulation is defined as processes children engage in to modulate arousal or reactivity (Rothbart & Bates, 2006). When children are faced with an emotionally arousing situation or environment, they have an emotional reaction to the situation and then engage in coping strategies to manage their reactivity. Individual differences in a child's initial emotional reaction and ability to subsequently regulate help us to understand resulting behavioral and social outcomes (Eisenberg, Fabes, Carlo, & Karbon, 1992). Although emotional reactivity and emotion regulation are undoubtedly intertwined, the focus of the current study will be on emotional reactivity.

As noted earlier, aggression is defined by anger and the intent to harm (Crick et al., 1996; Eagly & Steffen, 1986). This definition implies that the emotional experience of anger is a necessary precursor of childhood aggression, making the study of the relation between emotional processes and aggressive behaviors particularly relevant. Consistent with this assertion, empirical research supports the association between aggression and anger (Calkins et al., 1999; Cole, Zahn-Waxler, Smith, 1994; Crick et al., 1996; Eisenberg et al., 2004). As a child experiences anger, there are several cognitive, behavioral, and physiological changes that can occur (Hubbard, Parker, Ramsden, Flanagan, Relyea, Dearing, et al., 2004). For example, children experiencing anger can become physiologically aroused as their heart beats more rapidly or skin conductance increases (Hubbard et al., 2004). Non-verbal and verbal expressions of anger such as tightening of the lips, clenched teeth, or increase in voice volume can also be noted by outside observers when a child is angry (Cole et al., 1994; Fabes et al., 1999; Hubbard et al., 2004). Moreover, subjective feelings of anger and angry cognitions are commonly reported during anger-provoking tasks (Hubbard et al., 2004; Underwood, Coie, & Herbsman, 1992). Although measures of anger do not always coincide (Hubbard et al., 2004), some individual combination of cognitive, behavioral, and physiological changes result in the experience of anger and expression of a negative emotional reaction to a situation.

There are clearly individual differences in the biological tendency to experience these cognitive, behavioral, and physiological changes associated with emotionally reactivity, and these individual differences relate to a child's socio-emotional functioning

(Eisenberg, Fabes, Carlo, & Karbon, 1992; Eisenberg et al., 1997; Rothbart & Bates, 2006). Eisenberg and colleagues (1992) asserted that two factors determine overall emotional arousal levels: (1) dispositional or temperamental reactivity to emotional situations and (2) ability to cope with emotional reactions. For some children the initial experience of negative emotions results in more intense changes in cognitive, behavioral, or physiological indices (Bates, 2000; Hubbard et al., 2004). As the experience of anger builds, there are several possible behavioral outcomes that either allows a child to cope with or further react to the anger. Some children are able to engage in emotion regulation strategies, with varying degrees of success, to attempt to reduce the negative emotions. For example, children may use distraction or seek help from a caregiver (Calkins et al., 1999). Other children are more likely to engage in maladaptive behaviors such as aggression as a reaction to or an attempt to cope with feelings of anger. Continued expression of negative emotions is thought to be one marker of emotional dysregulation that results in frustration, which can lead to a pattern of anger, irritability, or aggression (Oldenhinkel, Hartman, de Winter, Veenstra, & Ormel, 2004; Rothbart, Ahadi, Hershey, & Fisher, 2001; Sanson, Hemphill, & Smart, 2004).

Empirical research has consistently found modest direct effects from emotional reactivity, including the expression of anger, to aggression (Eisenberg, Fabes, Carlo, & Karbon, 1992; Eisenberg et al., 1997; Eisenberg et al., 1993; Marsee & Frick, 2007; Schultz, Izard, & Bear, 2004). Among preschool children, coded expression of anger during a disappointment laboratory task predicted higher mother- and teacher-reported behavior problems (Cole et al., 1994). After elementary school entry, emotional

reactivity continues to predict aggressive behaviors in first and second grade (Schultz et al., 2004). A similar association between emotional reactivity and social functioning, indexed by low disruptive behavior problems and high prosocial behaviors, was found longitudinally across a four year span from early to late elementary school (Eisenberg et al., 1997). Thus, emotionally reactive children are more likely to develop a pattern of aggressive behaviors and other socio-emotional difficulties in lieu of using or in response to unsuccessful attempts to use more adaptive emotion regulation strategies.

A large body of research has been devoted to the study of emotional reactivity and aggression. However, measurement of aggression in these studies has primarily focused on physical aggression. Although less studied, there is empirical and theoretical evidence to support an association between emotional reactivity and relational aggression. Consistent with research on physical aggression, two empirical studies have found relational aggression to be associated with anger (Crick et al., 1999; Crick et al., 1996) and others have found associations between relational aggression and more complex emotions such as jealousy (Parker et al., 2005). Conway (2005) suggested that although negative emotionality and emotion regulation difficulties have been associated with physical aggression, few studies have examined negative emotionality and emotion dysregulation as mechanisms responsible for the display of relational aggression in children. Underwood (2003), however, has implicitly linked emotionality and relational aggression asserting that gender differences in the expression of emotions may help us to understand gender differences in aggression. Relational aggression is hypothesized to be

a covert strategy some children use as an alternative to physical aggression to cope with negative emotions (Conway, 2005).

As described earlier, anger is one component of aggression (Crick et al., 1996). In an effort to establish relational aggression as a form of aggression, Crick and colleagues (1996) asked children in middle childhood to identify behaviors that their peers engage in when angry. Relationally aggressive behaviors were the most commonly cited angry behaviors for girls, whereas physically aggressive behaviors were the most commonly cited angry behaviors for boys. A qualitative study examining girls' responses to why children use relational aggression revealed that relational aggression is often used to alleviate anger and jealousy (Owens, Shute, Slee, 2000a, 2000b). Moreover, jealousy was the second most common rationale cited by 7th and 8th grade girls and boys for the use of relational aggression (Paquette & Underwood, 1999), suggesting that jealousy is a common trigger for both boys' and girls' relational aggression. Thus, relational aggression is associated with feelings of anger and jealousy, and children are associating relational aggression more readily with girls' negative emotions.

With relational aggression, the vehicle of harm is the friendship or peer relationships, which implies that emotions within the peer context are particularly relevant for relational aggression. Examination of contextual factors and emotions revealed that relationally aggressive children display relatively more distress in response to relational provocations (e.g., child overhears talk of an upcoming party to which the child has not been invited) compared to instrumental provocations (e.g., peer break's the child's new radio; Crick et al., 2002). The opposite relative relation was found for

physically aggressive children, indicating that contextual provocation factors help elucidate when relational and physical aggression are used. Looking more broadly at the peer context, issues related to intimacy, jealousy, and friendship conflict are likely contextual factors contributing to increased opportunity for emotionally reactive children to act on their negative emotions by using relational aggression. Moreover, emotional peer situations aid in the understanding of why girls, unlike boys, use relatively more relational aggression compared to physical aggression.

One of the primary features of a small peer group, which is more common among girls compared to boys (Block, 1983; Eder & Hallinan, 1978), is intimate self-disclosure (Berndt, 1982). Girls' smaller groups seem to facilitate intimate disclosure of personal information. Moreover, girls tend to rate intimacy as being more important in a friendship (i.e., dyadic peer group) and as developing earlier compared to boys (Azmitia, Kamprath, & Linnet, 1998; Blyth & Foster-Clark, 1987; Buhrmester & Furman, 1987). Block (1983) suggested that boys are more likely to emphasize loyalty and shared activities, whereas girls emphasize the support they receive through the sharing of intimate experiences. Similarly, girls tend to exhibit more empathy and concern for their friends (Zahn-Waxler, Cole, & Barrett, 1991). Consistent with these gender differences in intimacy, 39% of girls in 7th through 10th grade rated same-sex friends as their most intimate relationship—even above their family relationships—compared to 19% of boys (Blyth & Foster-Clark, 1987). Overall, boys rated relationships with their parents as the most intimate and girls rated relationships with same-sex peers as the most intimate (Blyth & Foster-Clark, 1987).

Thus, girls are reporting greater intimacy in their peer groups and friendships, but how is this intimacy achieved? Although somewhat counterintuitive, one mechanism to achieve greater intimacy is through relational aggression, and in particular through gossiping. McKnight and Putallaz (2005) point out that gossiping allows girls to learn social normative behavior. Learning can be in the form of observing the reaction of peers, indicating approval or disapproval, as they talk about others (Fine, 1977). In addition to learning about social norms, the cohesion that results from gossiping may help children to feel more included, in turn improving their self-esteem (Underwood, Galen, & Paquette, 2001). Although gossip may increase group cohesion, it also differentiates between those who are included or excluded from a group. Therefore, gossiping serves a prosocial goal of intimacy, while also facilitating another divisive goal of exclusion.

Although greater intimacy may be a strong form of emotional support for girls, the outcomes of this intimacy are not all positive. Since girls engage in more emotional sharing than boys (Caldwell & Peplau, 1982), they are likely giving out more information for people to gossip about. Jealousy within friendships and among the peer group tends to increase with age (Azmitia et al., 1998), coinciding with the increase in intimate disclosures among girls (Blyth & Foster-Clark, 1987). The sharing of personal information may lead to this increase in jealousy. When girls share information about their families—and in particular information related to wealth and social status—they may try to outdo each other, especially due to girls' association between popularity and family status (Adler & Adler, 1998). This one-upmanship partially accounts for the higher levels of friendship jealousy for girls compared to boys (Parker et al., 2005).

Intimacy and its associated jealousy are particularly problematic and pervasive for relationally aggressive children, as they have been found to be exclusive and intimate in the peer domain (Nelson & Crick, 2002). Grotpeter and Crick (1996) used peer nominations of relational aggression and self-report of friendship characteristics to examine the friendship characteristics of relationally aggressive children. Results revealed that relationally aggressive children reported greater intimacy and exclusivity within their friendships (Grotpeter & Crick, 1996). Over time, an increase in friendship intimacy was associated with an increase in fourth grade relational aggression for girls only (Murray-Close, Ostrov, & Crick, 2007). In addition to greater intimacy, peers reported that relationally aggressive children were more jealous compared to non-aggressive children (Parker et al., 2005). As a result, intimate self-disclosure is associated with greater emotional expression of jealousy, which causes conflict within the friendships of relationally aggressive children.

In a study on conflict in friendships, Cairns and Cairns (1984) found that boys and girls were equally likely to be nominated by peers as being involved in conflicts. Girls, however, reported that they often initially ignore conflict when angry toward another girl, whereas boys rarely ignore provocations. Several researchers have pointed out that girls struggle with wanting to be perceived as being nice while at the same time wanting to express anger and jealousy (Brown, 1998; Crothers, Field, & Kolbert, 2005; Frith, 2004, Letendre, 2007). This conflict is evidenced by studies examining emotional dissemblance (i.e., not expressing emotions that are experienced by the child). Miller and colleagues completed a study where children were observed playing in same-sex and

cross-sex groups of six (Miller, Danaher, & Forbes, 1986). Based on observational

coding, girls were more likely to use indirect means of anger expression, such as ignoring

a request to hand over a doll rather than telling the other child "no." In another study,

girls also reported that they were more likely to act nice to someone who they disliked

compared to boys (Rosenberg & Simmons, 1975).

This emotional masking is consistent with a study where 3rd, 5th, and 7th grade

children were asked to answer questions about how they would respond to hypothetical,

video-taped vignettes where children were provoked by either a peer or a teacher

(Underwood et al., 1992). Overall, boys and girls reported that they would feel equally

angry following the hypothetical situations; however, girls were less likely than boys to

choose angry faces to describe the facial expression associated with their emotional

reactions. The struggle between feeling anger and not expressing anger is also evident in

a study of 4th and 6th grade children who were asked to play a video game with a same-

sex confederate (Underwood, Hurley, Johanson, & Mosley, 1999). Throughout the video

game the confederate repeatedly taunted the participant. After the game, girls reported

that they felt more bothered by the taunting of the confederate compared to boys. Girls,

however, were less likely to make negative statements toward the confederate during the

task, and they were more likely to make negative self-statements compared to boys.

Similarly, 4- and 6-year-old girls were more likely than boys to express sadness, whereas

boys were more likely than girls to express anger during a competitive game laboratory

task (Chaplin, Cole, & Zahn-Waxler, 2005). These findings are consistent with gender

differences in the expression of negative emotions after receiving a disappointing gift, as

boys were more likely to express negative emotions than girls (Davis, 1995). Thus, girls are caught in a situation where they feel anger but do not want to overtly express this anger. One remaining question is how emotionally reactive girls develop the pattern of feeling anger without initially or overtly expressing those feelings.

Socialization of Emotion

One potential environmental factor that could explain why girls are less likely to overtly express anger is maternal socialization of emotions as socializing behaviors teach children how and when to express emotions. Although empirical research supports the use of gender specific expression in response to negative emotions (Chaplin et al., 2005; Davis, 1995; Underwood et al., 1999), it is unclear how gender differences in this construct emerge. Eisenberg, Cumberland, and Spinrad (1998) pointed out that parents often do not openly report using gender specific socialization strategies. In contrast, beliefs about what emotions are acceptable or appropriate to express—known as "display rules"—are often gender specific (Saarni, 1993). Overall, maternal support for emotional expressivity tends to be higher for girls (Bronstein, Briones, Brooks, & Cowan, 1996); however, the expression of anger is less acceptable for girls and the expression of sadness is less acceptable for boys (Brody, 2000; Bronstein et al., 1996; Chaplin et al., 2005). Girls may even express positive emotions in place of negative emotions, as positive and negative emotions were related for girls but independent factors for boys (Brody, 2000). Often through parental socialization of emotions, children learn to incorporate display rules into their own expression of emotions (Underwood, 2003). While emotional reactivity predicts the development of aggression, parenting practices in the socialization

of emotions are thought to provide an additional explanation for why girls are more relationally aggressive than physically aggressive (Underwood, 2003) and why boys do not display this relative difference. Thus, parenting practices that teach children about the expression of a range of emotions may explain if and how emotionally reactive children display aggression.

Various forms of supportive parental socialization of emotion strategies have been related to childhood adjustment and prosocial behaviors. For example, during a laboratory task designed to elicit empathy, maternal linking of the content in a video to personal experiences was associated with lower negative emotionality (Eisenberg et al., 2001). Similarly, parents who display warmth and discuss the emotional content of a stimulus were found to have children with fewer behavior problems (Eisenberg et al., 2001). Thus, parents who help their children relate to and understand emotions they experience in a calm and positive manner have children with more adaptive and less severe emotional reactions.

In contrast to the socialization strategies that seem to elicit prosocial behavior, there are other socialization strategies—such as distress reactions and minimization—that are associated with problem behaviors. Distress reactions and minimization socialization strategies have both been associated with maladaptive outcomes (Chaplin et al., 2005; Fabes, Leonard, Kupanoff, & Martin, 2001). Moreover, gender differences in the use of these two strategies may help us understand the differential pathway from emotional reactivity to either physical or relational aggression.

When a mother responds to a child's negative emotions with her own negative emotions, such as getting angry, she is said to be responding with a distress reaction (Fabes, Eisenberg, & Bernzweig, 1990). Social learning theory purports that children learn how to act in their social world by modeling the actions of others (Bandura, 1973). Applying this concept to distress reactions, children who see their mothers responding to emotions or distressing situations openly with their own negative emotions may teach children the immediate response to distress is to react with a strong emotion. When children respond with a strong negative emotion, we have already established that they are at risk for responding with physically aggressive behaviors and for having subsequent peer difficulties (Eisenberg et al., 1993; Eisenberg et al., 1997; Eisenberg et al., 2001; Maszk et al., 1999). As such, parental use of harsh coping strategies and parental distress in reaction to negative emotions were both associated with greater child emotional reactivity (Fabes et al., 2001). Parental distress was also associated with more intense expressions of anger (Eisenberg & Fabes, 1994). Likewise, parents who reported both harsh coping and distress reactions to negative emotions had children with the lowest teacher-reported social competence (Fabes et al., 2001). With respect to gender differences, parental distress reactions were more strongly associated with boys' emotional reactivity compared to girls' emotional reactivity (Eisenberg, Fabes, & Murphy, 1996).

Conversely, some mothers devalue their child's experience of negative emotions by telling their children to stop getting upset about something, a socialization strategy termed minimization (Fabes et al., 1990). When minimization strategies are used,

children are taught to withhold the outward expression of their negative emotions; however, no specific strategy to help the child cope with negative emotions is provided when only minimization is used. As a result, emotionally reactive children who are told to stop showing a negative emotion will continue to feel sad, angry, or upset without getting the support to cope with these emotions, which may result in the maladaptive expression of emotions either covertly or delayed in time. One such maladaptive coping mechanism hypothesized is the use of relational aggression, which is more covert than physical aggression and is often delayed in time (e.g., spreading rumor; Conway, 2005).

Among 3- to 5-year-olds, maternal minimization of negative emotions was positively associated with the frequency of anger coded during naturalistic observations of classroom and playground situations (Eisenberg, Fabes, Carlo, & Karbon, 1992). Thus, when parents attempt to minimize negative emotions, they are often unsuccessful as their children are more likely to display negative emotions. The sample size in the study by Eisenberg and colleagues (1992) was too small to examine gender differences; Gender differences in socialization of emotion were, however, found in a larger study on sympathy. During a sympathy inducing situation, maternal expression of negative emotions (e.g., regret, sadness) was positively associated with their daughter's, but not their son's, attempts to help another child (Eisenberg, Fabes, Carlo, & Karbon, 1992). Consistent with these gender differences, Eisenberg and colleagues found that maternal restriction of negative emotions during an empathy task elicited distress among girls but not boys (Eisenberg, Fabes, Carlo, Troyer, et al., 1992). In addition, expressiveness during a disappointment task was explored and it was determined that girls who

minimized their expression of negative emotions exhibited disruptive behavior problems (Cole et al., 1994). In contrast, the expression of negative emotions in the presence of an experimenter was positively associated with behavior problems for boys (Cole et al., 1994). Consistent with these findings and compared to distress reactions, mothers were more likely to respond to their daughter's emotional reactivity with minimization reactions (Eisenberg et al., 1996). Thus, minimization of negative emotions is particularly relevant to girls' ability to react in a prosocial manner such that minimization is associated with less helping behavior, more distress, and more problem behaviors putting girls at risk for using more relational than physical aggression.

When examined separately, emotional reactivity and parental socialization of emotions both relate to child functioning (Eisenberg et al., 1993, 1997; Eisenberg et al., 1998; Maszk et al., 1999); however, the interaction between these two variables may help us better parse out when and why children exhibit various behavior problems, including relational and physical aggression. For example, a review on parental socialization of emotions highlighted that parents respond differently to children depending on the child's temperament, which implies a bidirectional relation between children and their parent's socialization attempts (Eisenberg et al., 1998). Consistent with this assertion, a study of 4- to 6-year-olds found that mothers were more likely to respond to their children's negative emotions in a punitive or avoidant manner when they perceived their child to be high in negative emotionality (Eisenberg & Fabes, 1994). Moreover, the specific type of socialization strategy used may help us understand differential pathways to relational and physical aggression with distress reactions having more theoretical and empirical support

predicting physical aggression and minimization having more support predicting relational aggression. As such, the interaction between emotional reactivity and parental socialization of emotion strategies will provide a more complete picture of the complex emotional processes that contribute to the expression of relational and physical aggression.

Study 1 Research Objectives and Hypotheses

Many studies have found that emotional reactivity in childhood is related to behavior problems, including physical aggression (Eisenberg et al., 1993, 1997, 2001; Maszk et al., 1999). Few studies, however, have examined the association between emotional reactivity and relational aggression. Despite the lack of empirical research, several researchers have theorized that, similar to physical aggression, emotional reactivity may also be related to relational aggression (Underwood, 2003; Conway, 2005). As such, one goal of the current study is to explore the relation between emotional reactivity and two forms of aggression, physical and relational. Although emotional reactivity is associated with aggression, there has been speculation that parental socialization of emotions informs the directionality of the specific subtype of aggression (Underwood, 2003). Namely, minimization strategies are theorized to socialize an emotionally reactive child to use covert and maladaptive coping, such as relational aggression, whereas distress reactions are theorized to provide emotionally reactive children with the modeling to use more overt expressions of emotions including physical aggression. In addition, gender differences in socialization strategies help us understand gender differences in the relative use of relational and physical aggression.

Therefore, another goal of this study is to examine the interaction between emotional reactivity and socialization of emotions in the prediction of aggression. Specific socialization strategies will be examined to determine pathways to relational and physical aggression.

The variables of interest for the current study are kindergarten emotional reactivity (i.e., coded emotionality during a disappointment laboratory task and coded emotional dissemblance during a disappointment laboratory task), maternal report of emotion socialization strategies in kindergarten (i.e., distress reactions, minimization reactions), and peer nominations of 2nd grade relational and physical aggression. Two specific research questions will be addressed in study 1: (1) What is the relation between emotional reactivity and two forms of aggression—relational and physical? (2) Do socialization strategies interact with child emotional reactivity to differentially predict relational and physical aggression as a function of the child's gender?

Consistent with the theoretical and empirical research, it was expected that high emotional reactivity would predict aggression and the interaction between emotional reactivity and distress would specifically predict physical aggression and the interaction between emotional reactivity and minimization would specifically predict relational aggression. Given hypothesized gender differences in socialization of emotions (i.e., mothers were expected to respond to girls' emotional reactivity with more minimization and to boys' reactivity with more distress), the former interaction was expected to be significant for boys, whereas the latter interaction is expected to be significant for girls. Therefore, a separate interaction was hypothesized for boys and girls. For boys, the

following interaction was predicted: Emotional Reactivity × Distress Reactions →

Physical Aggression. For girls, the following pathway was predicted: Emotional

Reactivity × Minimization Reactions → Relational Aggression.

CHAPTER II

STUDY 1: METHOD

Participants

The current sample (n = 365) used data from three cohorts of children who are

part of an ongoing, longitudinal study beginning when children were 2 years of age. The

goal of the larger longitudinal study is to understand trajectories of externalizing behavior

problems as they relate to children's social and emotional development. The current

study will focus on gender differences in relational and physical aggression as they relate

to emotional reactivity and the socialization of anger. The goal for recruitment of all

three cohorts was to obtain a sample of children who were at risk for developing future

externalizing behavior problems that was representative of the surrounding community in

terms of race and socioeconomic status (SES). All cohorts were recruited through child

day care centers, the County Health Department, and the local Women, Infants, and

Children (WIC) program. Potential participants for cohorts 1 and 2 were recruited at 2

years of age (cohort 1: 1994-1996 and cohort 2: 2000-2001) and screened using the Child

Behavior Checklist (CBCL 2-3; Achenbach, 1992) completed by the mother to over-

sample for externalizing behavior problems. Children were identified as being at risk for

future externalizing behaviors if they received an externalizing T-score of 60 or above.

Efforts were made to obtain approximately equal numbers of males and females. A total

of 307 children were selected.

Cohort 3 was initially recruited when infants were 6 months of age (in 1998) for their level of frustration based on laboratory observation and parent report and followed through the toddler period (See Calkins, Dedmon, Gill, Lomax, & Johnson, 2002, for more information). Children whose mother's completed the CBCL at 2 years of age were included in the current study ($n = 140$). Of the entire sample ($N = 447$; 215 males, 232 females), 37% of the children were identified as being at risk for future externalizing problems (T $\geq$ 60 on the Child Behavior Checklist; Achenbach, 1992). There were no significant demographic differences between cohorts with regard to gender, χ^2 (2, $N = 447$) = .63, p = .73, race, χ^2 (2, $N = 447$) = 1.13, p = .57, or 2-year SES, F (2, 444) = .53, p = .59.

The current study focused on a laboratory kindergarten assessment and a second grade school assessment. In kindergarten, 365 families participated in the laboratory assessment and 255 children participated in the second grade school assessment. Families lost to attrition included those who could not be located, who moved out of the area, who declined participation, and who did not respond to phone and letter requests to participate. Missing data from the school assessments were due to parents or principals not giving consent for the school assessment, schools being too far away, or teachers not completing questionnaires. There were no significant differences between families who did and did not participate in terms of gender, χ^2 (1, $N = 447$) = .76, p = .38, race, χ^2 (1, $N = 447$) = .17, p = .68, 2-year socioeconomic status, t (424) = 1.93, p = .06) and 2-year externalizing T-score (t (445) = -1.73, p = .09).

Procedures

    Kindergarten laboratory assessment. When children were 5.5 years old, children and their mothers were administered a battery of tasks and questionnaires in the laboratory. Two measures of interest for this study were a maternal-report questionnaire assessing maternal socialization of negative emotions and a maternal-report questionnaire assessing child emotional reactivity. In addition, children were asked to participate in a laboratory task designed to elicit disappointment ("Box Empty" from LAB-TAB manual; Goldsmith, Reilly, Lemery, Longley, & Prescott, 1995). For this task, an experimenter gave the child a wrapped empty box, told the child the box was a present he/she could unwrap, and then the experimenter left the room. Children were left in the room to unwrap the present with their mothers present for approximately 1 minute. After approximately 1 minute, the experimenter returned, waited 10 seconds, and then exclaimed that she forgot to put the present in the box. The child was then handed the present. Sadness, anger/frustration, and positive emotions were coded from this task as a measure of emotional reactivity. In addition, emotions coded during the first 10-second epoch when the experimenter returns were used to assess emotional dissemblance (i.e., the ability to hide negative emotions).

    Second grade school assessment. Consent from the families was obtained to complete an assessment in the child's second grade classroom. At this time, an assessment of the child's relational aggression and physical aggression were obtained by interviewing peers in the classroom. This assessment did not take place until the children had at least 8 weeks in the classroom to become acclimated to their peers, and only

children with parental consent were interviewed. Trained graduate and undergraduate students individually interviewed each child. The sociometric procedures used were a modified version of the Coie, Dodge, and Coppotelli (1982) original procedure. Instead of asking children to nominate three peers for each category, children were asked to give unlimited nominations for each category. This method allows for more reliable results and a reduction in measurement error (Terry, 2000). Furthermore, this increased precision can be achieved with fewer classmates than are needed for the limited-choice nominations. Cross-gender nominations were permitted to increase the stability of measurement for the nominations to determine peer status. To ensure that the children had a good understanding of the questions, they were asked to go through several sample questions until they understood the task, and pictures of all of the participating children were provided as visual prompts. Interviewers were trained to provide further information and more examples if the child did not seem to grasp the questions. In addition to sociometric nominations, teachers were asked to fill out several questionnaires on the target child to assess the child's social, emotional, cognitive, and behavioral functioning in the school setting.

Measures

   Emotional reactivity in kindergarten. Mother-reported, kindergarten emotional reactivity measured by the lability/negativity subscale on the Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997) was used to examine correlations between socialization of negative emotions and parent perceptions of their child's emotional reactivity. The lability/negativity subscale includes 15-items rated on a four-point scale to

indicate the frequency of emotionally reactive behaviors. This subscale assesses arousal, emotional reactivity, anger dysregulation, and mood lability (Shields & Cicchetti, 2001). Sample items include: "Is easily frustrated," "Is prone to angry outbursts/tantrums easily," and "displays negative emotions when attempting to engage others in play." Cronbach's alpha for all items on the lability/negativity subscale in the current study is .86.

Emotional reactivity at kindergarten laboratory task. Emotional reactivity was coded during the kindergarten laboratory disappointment task described earlier. *Sadness, anger/frustration, and positive emotions* were coded in 10-second epochs to capture the child's emotional reactivity during the task. The coding manual was adapted from two, separate coding schemes (Cole et al., 1994; Goldsmith et al., 1995). Coding was not mutually exclusive, as children could display some degree of sadness, anger/frustration, and positive emotions during one, 10-second epoch. During each epoch a score from 0 (i.e., mild emotional reactivity) to 4 (i.e., extreme emotional reactivity) was recorded to represent the degree of sadness, anger/frustration, and positive emotions. Scores were determined based on voice cues, body cues, verbal expressions, and the facial affect of the child. Each score from 0 to 4 was anchored in the coding manual with a description to guide the coder. Scores for eight, 10-second epochs prior to the experimenter's return to the room were averaged to create an emotional reactivity score: *sadness, anger/frustration, and positive (reverse scored).* Furthermore, scores during the 10-second epoch when the experimenter first returns were examined to see if children mask their disappointment—either with low negative affect or with high positive affect—in the

presence of an experimenter. Mean *sadness, anger/frustration, and positive (reverse scored)* ratings coded when the experimenter is present were used as a measure of *emotional dissemblance*. High scores on this measure represent high negative affect and low positive affect. Low scores represent low negative affect and high positive affect. To ensure interrater reliability, two trained students separately coded approximately 20% of the same tapes, and all adjusted kappas were above .70.

    Maternal socialization of emotions in kindergarten. Mothers completed the Coping with Children's Negative Emotions Scale (CCNES; Fabes et al., 1990) during the kindergarten laboratory visit. The CCNES was used as a moderator of the relation between emotional reactivity and aggression in the current study. The CCNES measures the types of responses parents give to their children's display of negative emotions and is intended to assess parental socialization of negative emotions. This measure includes a short description of 12 situations involving negative emotions (e.g., "If my child becomes angry because s/he is sick or hurt and can't go to a friend's birthday party, I would") followed by 6 potential responses (e.g., "tell my child not to make a big deal out of missing the party"). Because the CCNES contains only one situation that depicts anger, two additional anger situations were added to the measure. These situations were obtained from the Parent Attitude toward Child Expressiveness Scale (PACES; Saarni, 1985). On all twelve items, mothers rated how likely they would be to use each of the six responses on a seven point scale, ranging from 'very unlikely' to 'very likely'. This scale yields six subscales: Distress Reactions, Punitive Reactions, Expressive Encouragement, Emotion-Focused Reactions, Problem-Focused Reactions, and

Minimization Reactions (Fabes et al., 1990). For the current study, it was important to examine socialization of anger rather than overall socialization of emotion due to predicted gender differences in anger socialization and gender differences in anger display rules. Moreover, hypotheses for the current study focus on distress reactions and minimization reactions. As a result, mean distress reactions (e.g., become angry and irritated with my child) and mean minimization reactions (e.g., tell my child not to make a big deal out of missing the party) were computed from only the three items describing anger situations. The first item states: "If my child becomes angry because s/he is sick or hurt and can't go to a friend's birthday party, I would." The second anger item asks mothers, "If my child becomes angry and starts to yell after I accidentally throw away his/her favorite comic book, I would." The last anger item says, "If my child becomes very angry at her/his sibling and begins to shout and stomp around the room, and I am nearby, I would." Cronbach's alpha for anger distress reactions was .60, which is relatively low but similar to the alpha for all 12 items on the distress reactions scale (α = .68). Items included in the anger minimization reactions score had a slightly higher alpha (α = .69), although the alpha for the anger items was lower than the alpha when including all twelve items (α = .82). Longitudinal correlations from kindergarten to second grade demonstrate stability of anger distress reactions (r = .61, p < .001) and anger minimization reactions (r = .56, p < .001).

Second grade aggression. Relational aggression, physical aggression, and general aggression were assessed using second grade peer nomination scores. A *relational aggression* score was obtained from the sociometric procedures using the following

items: Spread rumors, exclude others, say they'll stop being friends. The scripts for these items are as follows: "Some kids make up stories about other kids that aren't true and spread rumors about kids in their class. Who are the kids in your class who gossip like this?" "When some kids get mad at other kids they won't let them play with the group and they might even try to keep them from playing by ignoring them or telling other kids not to play with them. Who are the kids in your class that won't let other kids play when they are mad at them?" and "Who are the kids that say 'I won't be your friend anymore unless you do it my way' or say they'll stop liking you if you don't do what they want?". In addition, *physical aggression* was measured using the peer-nominated item "fights." The relational aggression and physical aggression scores were averaged to create a *general aggression* score. Although only one nomination item was used to assess physical aggression, responses from all classroom reporters on these items were averaged. Similar procedures using one physical aggression item have been successfully used with elementary school students (Cillessen & Borch, 2006; Cillessen & Mayeux, 2004; Dodge, 1983; Schultz et al., 2004). Scores for relational aggression and physical aggression were standardized within classrooms. The three standardized relational aggression items were then averaged to compute one composite relational aggression score.

CHAPTER III

STUDY 1: RESULTS

Overview

Due to predicted gender differences, all analyses are presented separately by gender. First, intercorrelations and descriptive statistics among the variables of interest were examined. Following this step, a series of hierarchical linear regressions are presented to examine the hypothesized interactions. Prior to each analysis, all continuous main effects were centered based on means within gender before creating interaction terms. All significant interactions were further investigated according to methods outlined by Aiken and West (1991). Regression analyses are presented in two steps. (1) The first set of regressions examined the 2nd grade outcome of general aggression (i.e., relational and physical aggression combined). The main effects and interactions of kindergarten emotional reactivity (i.e., laboratory coded emotional reactivity and laboratory coded emotional dissemblance, examined separately) with maternal minimization of anger and distress reactions to anger were examined as predictors. (2) Next, hierarchical linear regressions predicting relational aggression and physical aggression were examined. Emotional reactivity, minimization, and distress main effects and interactions were entered as predictors. Moreover, relational aggression or physical aggression were entered in the first step to partial out the variance of the form of aggression that was not being examined as the outcome. This first step allowed for the

examination of the unique variance associated with each form of aggression. Many

studies have used similar analytic strategies to address issues related to highly correlated

constructs such as relational and physical aggression (Hubbard et al., 2004; Loukas et al.,

2005; Marsee & Frick, 2007; Sandstrom, 2007).

Descriptive Statistics and Intercorrelations

Descriptive statistics for the study variables are presented in Table 1. All

variables were first analyzed for normality. Variables with skewness values above one

were transformed using a natural log transformation to achieve normality.

Transformations were necessary for girls' physical aggression and girls' relational

aggression. After these transformations all skewness and kurtosis values were below one.

A multivariate analysis revealed that there were no significant differences among the

variables of interest in terms of minority status [Boys: $F (9, 64) = 1.67$, $p = $ n.s.; Girls: F

$(9, 89) = 1.76$, $p = $ n.s.]. There were, however, gender difference [$F (9, 163) = 4.45$, $p <$

.001]. Namely, girls had lower parent-reported emotional reactivity [Girls: M = 1.85,

SD = .37; Boys: M = 2.00, SD = .37], emotional expression in the presence of an

experimenter [Girls: M = 1.29, SD = .53; Boys: M = 1.46, SD = .52], general aggression

[Girls: M = -.18, SD = .74; Boys: M = .27, SD = .92], physical aggression [Girls: M = -

.30, SD = .79; Boys: M = .36, SD = 1.09], and relational aggression [Girls: M = -.07,

SD = .83; Boys: M = .17, SD = .85]. Interestingly, when controlling for physical

aggression, girls had significantly higher relational aggression (Girls' estimated marginal

mean = .13, SD = .05; Boys' M = -.07, SD = .06) and when controlling for relational

aggression, boys continued to have higher physical aggression (Girls' estimated marginal

mean = -.21, SD = .05; Boys' M = .25, SD = .06). It is also noteworthy that during the

laboratory disappointment task both genders displayed similar levels of emotional

reactivity after being disappointed; however, girls were significantly better at hiding

negative emotions when the experimenter returned, showing evidence that girls display

more emotional dissemblance. Two bivariate correlations between variables of interest

and kindergarten socio-economic status were significant (Boys' maternal minimization: r

= -.19, p < .05; Girls' maternal distress: r = .19, p < .05); however there were no

significant associations with any dependent variable.

Intercorrelations among the study variables are presented in Table 2. Fisher's r-

to-z transformations were computed and revealed that there was a significantly stronger

association between boys' physical and relational aggression compared to girls' physical

and relational aggression (Boys: r = .81, p < .001; Girls: r = .63, p < .001; z = 3.03, p <

.01).   In addition, maternal distress and minimization reactions were more closely related

for girls compared to boys (Boys: r = .17, p < .05; Girls: r = .44, p < .001; z = 2.76, p <

.01). Minimization and distress were not associated with coded emotional reactivity or

emotional dissemblance, creating ideal conditions for examining moderation. Although

there were not gender differences in the minimization and distress scores, mothers did

respond differently to their child's emotional reactivity depending on their child's gender.

Mothers used both minimization and distress in response to emotionally reactive

daughters (distress: r = .30, p < .001; minimization: r = .18, p < .05; z = -1.20, p = n.s.).

In contrast, mothers were more likely to respond to boys' emotional reactivity with

distress compared to minimization (distress: $r = .46$, $p < .001$; minimization: $r = .06$, $p =$ n.s.; $z = -3.90$, $p < .001$).

Due to the overlap between physical and relational aggression, partial correlations are provided in Table 3. Partial correlations were largely non-significant and there were no gender differences in the strength of the partial correlations.

Regressions Predicting General Aggression

One hypothesis of the current study was that kindergarten maternal minimization of anger and distress reactions to anger would moderate the association between kindergarten emotional reactivity and 2nd grade aggression. To examine this question, four hierarchical linear regressions with standardized βs and change in R^2 for each step are presented in Tables 4 and 5. Emotional reactivity as measured by coded emotional reactivity during the laboratory disappointment task is presented in Table 4. Results examining emotional dissemblance coded during the laboratory disappointment task are presented in Table 5. The dependent variable for the regression analyses was 2nd grade, peer-nominated aggression. Main effects for emotional reactivity, minimization, and distress were entered in the first step. Step 2 included all two-way interactions among the variables. Finally, the three-way interaction among emotional reactivity, minimization, and distress was entered in Step 3. When examining emotional dissemblance in Table 5, an additional step was added before all the predictors to partial out the effects of coded emotional reactivity before the experimenter returned to the room.

The interaction between kindergarten coded emotional reactivity and distress predicted 2nd grade aggression for boys only (Table 4). With respect to emotional

dissemblance, there was a main effect for girls only such that the inability to mask negative emotions in the presence of an unfamiliar adult (i.e., the experimenter) predicted 2nd grade aggression (Table 5). Although there was one marginal interaction, there were no significant two-way or three-way interactions for either gender when emotional dissemblance was entered as a predictor.

The interaction between boys' emotional reactivity and distress in Tables 4 was explored following methods outlined by Aiken and West (1991). The first two-way interaction was depicted in Figure 2 by plotting the regression of boys' 2nd grade aggression (Y) on kindergarten coded emotional reactivity (X) as a function of two values of maternal distress reactions to anger, Z_L and Z_H (i.e., one standard deviation below the mean, one standard deviation above the mean). Unstandardized B's were used to calculate the regression lines. From the graph it is apparent that boys who are emotionally reactive tend to display lower levels of aggression when their mothers respond to child anger with distress. In contrast, distress is not beneficial for boys with low emotional reactivity.

The next step was to determine whether the slopes of the lines plotted in Figures 2 were different from zero, as outlined by Aiken and West (1991). For Figure 2, two new variables were created, Z_{cvh} and Z_{cvl}, such that each variable reflected the distress score minus Z_H and Z_L, respectively. The crossproduct of each new variable with emotional reactivity (X) was computed. Finally, aggression was regressed on emotional reactivity, the conditional values of distress (i.e., Z_{cvh}, Z_{cvl}), and each crossproduct in two separate regression analyses. The resulting t-tests for the βs indicated the slope for low distress

was marginally different from zero (B = .72, β = .27, t = 1.75, p < .10), but the slope for high distress was not significantly different from zero (B = -.55, β = -.21, t = -1.33, p = n.s.).

Regressions Predicting Relational and Physical Aggression

Next, a series of regressions were computed to determine the interaction between emotional reactivity and socialization of anger as it predicted unique variance in relational aggression and physical aggression. The dependent variables of relational aggression and physical aggression were examined first using similar steps to those described when examining general aggression. Step 1 partialled out variance associated with either relational or physical aggression so that unique variance in the dependent variable could be measured. Step 2 included all main effects (i.e., emotional reactivity, minimization, and distress). All two-way interactions were entered in Step 3. Finally, Step 4 included the three-way interaction among emotional reactivity, minimization, and distress. Similar to the analyses with general aggression, emotional reactivity was assessed using two separate measures: coded emotional reactivity during a laboratory disappointment task and coded emotional dissemblance during a laboratory disappointment task. All significant interactions were explored using techniques described by Aiken and West (1991).

One hypothesis of the current study was that emotional reactivity would interact with minimization to predict relational aggression. Moreover, mothers of girls were expected to respond to anger with more minimization, and thus the interaction between emotional reactivity and minimization was only expected to predict girls' relational

aggression. Results in Table 6 demonstrate that after accounting for variance associated with physical aggression, coded emotional reactivity interacted with minimization to predict relational aggression for girls only. Similarly, emotional dissemblance interacted with minimization to predict only girls' relational aggression (Table 7). It is also noteworthy that no two-way or three-way interactions predicted physical aggression for girls.

An additional hypothesis was that distress would interact with emotional reactivity to predict physical aggression. Mothers were predicted to respond with more distress to their son's anger; therefore, the interaction between emotional reactivity and distress was only expected to predict boys' physical aggression. Similar to results from the general aggression regressions, coded emotional reactivity interacted with distress to predict only boys' physical aggression (Table 6). A similar interaction was a trend when boys' emotional dissemblance was examined (Table 7).   In contrast to boys' regressions predicting physical aggression, coded emotional reactivity interacted with distress to predict boys' relational aggression, but the β was in the opposite direction compared to the β predicting physical aggression (Table 6).

Similar to graphing procedures presented for general aggression analyses, all significant interactions were graphed according to procedures outlined by Aiken and West (1991). Figure 3 displays the interaction between coded emotional reactivity and minimization predicting girls' relational aggression. The graph shows that emotional reactivity predicted greater relational aggression only when mothers responded to anger with minimizing statements and actions. The slope for high minimization was

significantly different from zero (B = .29, β = .23, t = 2.37, p < .05), whereas the slope

for low minimization was not significantly different from zero (B = -.19, β = -.14, t = -

1.25, p = n.s.). The same pattern emerged for emotional dissemblance such that girls who

were not able to hide their disappointment when the experimenter returns in combination

with high maternal minimization of anger predicted the highest levels of relational

aggression (Figure 4). Although the pattern was similar, neither the high minimization

(B = -.14, β = -.15, t = -1.42, p = n.s.) nor the low minimization (B = .04, β = .04, t = .36,

p = n.s.) slopes were significantly different from zero.

Graphs displayed in Figures 5 and 6 show boys' two-way interactions predicting

physical and relational aggression. Consistent with the general aggression analyses,

emotionally reactive boys displayed relatively lower physical aggression when maternal

distress was high (Figure 5). The slopes for high distress (B = -.91, β = -.28, t = -3.28, p

< .01) and low distress (B = .77, β = .24, t = 2.84, p < .01) were both significantly

different from zero. Conversely, and more consistent with the interactions predicting

girls' relational aggression, emotionally reactive boys coupled with high distress results

in relatively high relational aggression (Figure 6). The slope for high distress was

significantly different from zero (B = .56, β = .22, t = 2.47, p < .05), and the slope for low

distress was marginally different from zero (B = -.42, β = -.17, t = -1.90, p < .10).

CHAPTER IV

STUDY 1: DISCUSSION

There is evidence that girls display relatively greater levels of relational aggression compared to physical aggression, whereas boys display similarly high levels of relational and physical aggression in childhood (Crick, 1995; Crick et al., 2002; Loukas et al., 2005; Rys & Bear, 1997). In light of these gender differences, little empirical research has examined factors that explain why these gender differences emerge. For both forms of aggression there is theoretical and empirical evidence implicating emotional processes in the development of aggression. In the current paper, maternal socialization of anger was proposed as a possible moderating factor that would provide initial evidence for why girls and boys display differing patterns of aggressive behavior. As such, the goals of this study were to examine the pathway from emotional reactivity to aggression and to examine maternal socialization practices as a potential gender-specific moderator. Namely, distress reactions and minimization reactions to anger were thought to interact with emotional reactivity differentially for girls and boys in the prediction of relational and physical aggression. Support for gender specific moderation pathways was established when examining emotional reactivity in the context of a disappointment laboratory task. For boys, kindergarten emotional reactivity interacted with kindergarten distress reactions to predict second grade general aggression, relational aggression, and physical aggression. Conversely for girls, kindergarten

emotional reactivity interacted with kindergarten minimization to predict second grade relational aggression, after accounting for variance associated with physical aggression.

There were several novel features of this study. The association between emotional reactivity and physical aggression has been established. In contrast, this is one of the first studies to empirically test the hypothesized relation between emotional reactivity and relational aggression. Moreover, emotional reactivity was assessed using coding with two separate reactivity score (i.e., coded emotional reactivity and coded emotional dissemblance), and a similar pattern of results was evident across both measures. Along the same vein, the use of multiple reporters at two different time points helps to bolster the efficacy of the findings as the use of different reporters reduces associations between variables due to same-reporter biases. Finally, and perhaps most novel, is that this study took a child by environment interaction approach to examine gender specific patterns of socialization of anger as an explanation for gender differences in the relative frequency of relational and physical aggression.

One additional novel feature of this study was that issues related to the correlation between relational and physical aggression were addressed using two separate statistical approaches. For second grade boys, the correlation between relational and physical aggression was .81, resulting in a question about whether relational and physical aggression are in fact two measurably separate constructs. Some have argued that correlations above .80 represent variables that are the same construct (Litch, 1995; Shadish, Cook, & Campbell, 2001); however, this assertion is somewhat inconsistent with the many studies that examined boys' relational and physical aggression separately

(Crick, 1996; Rys & Bear, 1997; LaFontana & Cillessen, 2002). Compounding the issue, many studies taking a categorical approach find that there are very few to no boys in the relational aggression only category (Crick, 1995; Crick et al., 1996; Crick et al., 2002; Crick & Werner, 1998; Loukas et al., 2005; Rys & Bear, 1997), which begs the question: is it appropriate to examine relational and physical aggression separately for boys? In contrast, the correlation between girls' relational and physical aggression was significantly lower ($r = .63$) than the correlation for boys, but still considered a high correlation in the social sciences literature. For second grade girls, relational and physical aggression are unique but commonly co-occurring constructs.

The overlap between relational and physical aggression yields a dilemma between wanting to analyze data appropriately for boys and girls, while also wanting to analyze data consistently for boys and girls, especially when examining gender differences. As such, the goal for the current study was to be mindful of the overlap in physical and relational aggression, while also being consistent with other studies that have looked at the two forms of aggression separately. The approach that was taken was to first examine a general aggression variable that was an average of peer-nominated physical and relational aggression. Next, unique variance in relational and physical aggression was examined by adding relational aggression in the first step of regressions examining the outcome of physical aggression and vice versa. Given the high correlation for boys' relational and physical aggression and the relatively lower correlation for girls, the discussion will focus on boys' general aggression results and girls' relational and

physical aggression results separately. However, mention of the corresponding analyses will be made for comparison and consistency across gender.

Emotional Reactivity as a Precursor to Aggression

Gender differences were hypothesized for emotional reactivity, relational aggression, and physical aggression. As expected, boys had higher parent-reported emotional reactivity. Unexpectedly, emotional reactivity was not different when coded during a laboratory disappointment task. When using a similar disappointment task, Liew, Eisenberg, and Reiser (2004) found only marginal gender differences in negative affect, with boys displaying more negative affect. For the current study, emotional reactivity was measured when only the child's mother was in the room. It is possible that girls were more likely to express emotions in this relatively private situation compared to more public situations when others are around. Consistent with this hypothesis, girls more than boys were able to mask their negative emotions in the presence of experimenter by either withdrawing negative emotions or replacing negative emotions with positive emotions, whereas boys were more likely to continue expressing negative emotions even when the experimenter returned to the room. These findings are consistent with gender differences in the expression of negative emotions, such that boys are more likely to express negative emotions, especially anger, compared to girls (Chaplin et al., 2005; Davis, 1995; Saarni & Weber, 1999).

With respect to aggression, girls had higher relational aggression than boys only after controlling for concurrent physical aggression, whereas boys had higher physical aggression regardless of whether relational aggression was controlled. Gender

differences in relational aggression have been somewhat mixed (Bosacki, 2003; Crick, 1995; Crick et al., 2002; David & Kistner, 2000; Henington et al., 1998; Loukas et al., 2005; Rys & Bear, 1997; Tomada & Schneider, 1997). Results from this study and others highlight the need to consider co-occurring physical aggression when examining gender differences in relational aggression (Rys & Bear, 1997). These finding demonstrate that relational and physical aggression are more tightly coupled for second grade boys compared to girls, which is also consistent with the higher correlation between the two forms of aggression for boys. In sum, boys who are highly physically aggressive also tend to be highly relationally aggressive. This relation is less often accurate for aggressive girls in second grade.

One of the primary goals of the study was to examine the relation between emotional reactivity and two forms of aggression. Conway (2005) suggested that emotionally reactive girls were particularly at risk for using relational aggression due to their propensity to experience more intense anger compared to peers coupled with social pressures for girls to refrain from expressing anger using physical means. For example, girls are encouraged to use words and facial expressions to express negative emotions more than boys, consistent with girls' use of more aggressive strategies that relay on the use of words and negative facial expressions to inflict harm (e.g., spreading rumors, making a face behind a child's back; Brody & Hall, 1993). When examining emotional reactivity coded during a laboratory disappointment task, the only association was with girls' physical aggression. This correlation was also not in the expected direction, as more emotional reactivity during the disappointment task was associated with less

physical aggression. Although somewhat counterintuitive, similar results were found by

Cole and colleagues (1994), as high-risk girls, indexed by clinical levels of teacher- and

parent-reported behavior problems, displayed less negative affect compared to low-risk

girls when an experimenter was not present during a disappointment task. Findings from

this study concluded that girls' minimization of negative emotions was a marker for other

maladaptive behaviors including attention problems and conduct problems (Cole et al.,

1994). In the current study, however, main effects for emotional reactivity were qualified

by significant two-way interactions with socialization of anger, as discussed in the next

section.

The Moderating Role of Maternal Socialization of Anger

As the results revealed, emotional reactivity alone was not a sufficient predictor

of aggression. With respect to maternal socialization of anger, it was expected that

mothers would respond to their daughter's emotional reactivity with more minimization

than distress and respond to their son's emotional reactivity with more distress than

minimization. This hypothesis was partially supported, as mothers used both

minimization and distress in response to emotionally reactive daughters. For boys,

however, mothers used more distress than minimization in response to emotional

reactivity. Thus, there appears to be some merit in examining maternal socialization of

anger as a factor influencing the gender differences in patterns of physical and relational

aggression.

First, boys' regression analyses were examined, with a focus on the general

aggression analyses. Results revealed that kindergarten laboratory coded emotional

reactivity interacted with maternal distress reactions to predict second grade general aggression scores (i.e., relational and physical aggression averaged). Inconsistent with hypotheses, boys who displayed high emotional reactivity during a disappointment laboratory task were more likely to display aggression in second grade when in the context of low maternal distress reactions. Before interpreting this interaction, it is noteworthy that although distress reactions seemed to be a positive factor for emotionally reactive boys, levels of maternal distress were generally low (M = 2.17 on a scale ranging from 1 to 7). As a result, these results should be interpreted as moderate distress reactions being beneficial for emotionally reactive boys.

Maternal distress reactions seem to set appropriate limits for emotionally reactive boys. There are at least two possible ways this could occur. One explanation is that when a child's reactivity is met with maternal distress this could be an aversive experience for the child and would be a form of punishment. Thus, boys would learn that intense emotional reactions are not acceptable responses to arousing situations, reducing their risk for aggressive behaviors and subsequent peer problems. A second explanation that is more probable given the low severity of the distress reactions is that moderate levels of maternal distress provide modeling of appropriate intensity of emotional expression and demonstrates empathy for her son's distress. Other studies have found maternal distress relates to both lower anger intensity and lower levels of venting as a strategy for coping with negative emotions (Eisenberg & Fabes, 1994). Consistent with these findings, Brody (2000) found that mothers who displayed more negative emotions had sons, but not daughters, who were rated more highly on warmth in response to

hypothetical stories. Moreover, maternal emotional expressiveness relates to boys'

sympathy (Eisenberg, Fabes, Carlo, & Karbon, 1992), suggesting the maternal expression

of emotions provides a positive teaching experience that gives a child the knowledge and

skills to respond in an emotionally sensitive and prosocial manner in the future.

In contrast, boys low on emotional reactivity display more aggression in the

context of relatively high maternal distress. Boys with temperamentally low emotional

reactivity are naturally less likely to become aroused in emotional situations. As a result,

having a parent who reacts with distress is inconsistent with the child's natural tendency

and increases the child's level of arousal. Whereas some studies have found maternal

distress relates to lower anger intensity (Eisenberg & Fabes, 1994), other studies have

found distress relates to greater outward expression of negative emotions (Eisenberg,

Fabes, Shepard, Guthrie, Murphy, & Reiser, 1999). Neither of these studies looked

specifically at the interaction between child characteristics and socialization of emotion,

which may be accounting for some of the discrepancy. The current results highlight the

need to examine child factors when determining the benefits of specific socialization

strategies. Although general aggression was examined, this interaction seems to be most

applicable to the display of boys' physical aggression, as the regression examining

unique variance in physical regression yielded a similar pattern.

When examining unique variance in relational aggression an opposite pattern

emerged such that distress increased risk for relational aggression among emotionally

reactive boys. It is possible that distress reactions place limits on boys' development of

physical aggression while increasing their risk for more covert forms of aggression such

as relational aggression; however, this interpretation may be premature. Given the high correlation between physical and relational aggression, it is possible that after accounting of physical aggression, it is unrealistic to predict relational aggression since there are few boys that fit in the relational aggression only category. As a result, the interaction between boys' emotional reactivity and distress predicting relational aggression should be viewed cautiously.

Finally, examination of girls' regression analyses revealed a different pattern of results. Emotionally reactive girls were more likely to display relational aggression in the context of high maternal minimization reactions to anger. Reactive children who experience maternal minimization may learn to hide their negative emotion but will remain anxious or internally emotionally aroused during emotional situations resulting in maladaptive outcomes that are less overt (Buck, 1984; Eisenberg, et al., 1999), which would account for the relatively few associations between minimization and overt problem behaviors found by Eisenberg and colleagues (1999). This assertion is consistent with the stronger association found between internalizing symptoms and relational aggression compared to physical aggression (Craig, 1998; Crick & Grotpeter, 1995) and also provides an explanation for the interaction between girls' emotional reactivity and minimization found in the current study.

The suppression of negative emotions can lead to increased arousal (Gross & Levenson, 1997), increasing the likelihood of maladaptive behaviors and dysregulated physiological responses (Petrie, Booth, & Pennebaker, 1998). As a result of lingering feelings of anxiety or arousal, relational aggression is one outlet for emotionally reactive

girls who have been taught to minimize their expression of anger. In terms of coping strategies, minimization has been positively associated with greater use of escape and avoidance tactics to deal with negative emotions (Eisenberg & Fabes, 1994; Eisenberg et al., 1996), which would presumably decrease a child's likelihood of becoming physically aggressive in the moment but would be consistent with the use of relational aggression to inflict harm at a later point in time. Using a broader scope than focusing on aggression, minimization has also been negatively associated with teacher-reported social skills (Eisenberg et al., 1996). With respect to adaptive outcomes, parental emotional expressivity and encouragement of girls' expression of emotions related to the girls' sympathetic responses indexed by physical assistance of others in a study of kindergarten and third grade children (Eisenberg, Fabes, Carlo, & Karbon, 1992). Likewise, discussion of emotions provides an opportunity for young children to learn about emotions and was negatively associated with behavior problems among a group of second to fifth grade children (Cervantes & Callanan, 1998; Eisenberg et al., 2001).

Similar results emerged for girls who were unable to hide their emotions after the return of the experimenter during a disappointment task. Namely, minimization related to greater levels of relational aggression only for girls who were unable to mask their negative emotions in the context of an unfamiliar adult even after accounting for variance associated with reactivity displayed when the experimenter was not present. The correlation between emotional reactivity and emotional dissemblance was high for boys and girls ($r = .65$, $r = .57$, $p < .001$, respectively) suggesting that kindergarten boys and girls are generally not good at hiding negative emotions. Thus, girls who are

unsuccessful at masking emotions in response to pressures from mothers to minimize expressions of anger are particularly at risk for showing a pattern of increased arousal resulting in the development of increased relational aggression.

Conversely, girls displaying low emotional reactivity and high emotional dissemblance exhibited lower relational aggression in the context of high maternal minimization. Mothers who matched and reinforced their daughter's tendency to remain calm by using minimization supported their daughters in maintaining a low level of reactivity, reducing their risk for the development of relationally aggressive behaviors. For example, a child who has only a mild or no negative reaction to an emotional situations would be validated in this response by a mother who says, "It's not a big deal."

Examining overall patterns of maternal socialization of emotions, there were several trends that emerged. Overall, minimization was more informative for understanding girls' aggression, whereas distress was informative for understanding boys' aggression. When predicting boys' aggression, maternal distress reactions seemed to provide limits for emotionally reactive boys and resulted in lower levels of aggressive behavior. In contrast, emotionally reactive girls displayed more relational aggression when in the context of high maternal minimization of anger. With respect to children with low emotional reactivity, the opposite patterns emerged. Namely, distress reactions tended to be problematic for boys with low emotional reactivity. Conversely, minimization generally provided a buffering effect for girls with low emotional reactivity.

Taken together, the concept of goodness-of-fit is relevant for both boys and girls. Thomas and Chess (1977) originally suggested that that children have the most adaptive outcomes when parents are responsive to their child's individual disposition (i.e., temperament) and needs. "Goodness-of-fit" was the term Thomas and Chess (1977) gave to describe the interaction between individual child and parent characteristics as it relates to developmental functioning. Numerous studies have confirmed the utility of this concept, as parent-child interactions have consistently been examined and found statistically significant in the literature (e.g., Bird, Reese, & Tripp, 2006; Schoppe-Sullivan, Mangelsdorf, & Brown, 2007; van Aken, Junger, Verhoeven, van Aken, & Dekovic, 2007). The results from the current study demonstrate that specific socialization strategies cannot be determined to be protective or problematic without examining these strategies within the context of the child's individual emotional reactivity. Moreover, the pattern of parent-child interactions as it relates to the development of aggression varies by gender.

CHAPTER V

STUDY 2: INTRODUCTION

The development of aggressive behaviors is not without a range of other social

consequences. In particular, the association between aggression and peer liking has been

a focus of much developmental research (Cairns, Cairns, Neckerman, Gest, & Gariepy,

1988; Cillessen & Mayeux, 2004; Coie, Dodge, and Kupersmidt, 1990). Aggressive

behaviors toward peers are not rewarding to the non-aggressive child and can result in

children withdrawing from interactions with aggressive children (Denham, 1986). Using

peer nomination techniques, physical aggression is consistently associated with lower

social preference for both boys and girls (Cillessen & Borch, 2006; Cillessen & Mayeux,

2004; Crick; 1996; Crick et al., 1997; Rys & Bear, 1997). This association was

confirmed using teacher report measures (Cairns et al., 1988).

Empirical studies using sociometric peer nomination techniques also consistently

find that relational aggression is negatively related to sociometric popularity. For

example, after controlling for physical aggression, relational aggression predicted higher

peer rejection (Crick, 1996; Rys & Bear, 1997) and lower social preference (LaFontana

& Cillessen, 2002) for girls only. Given that the majority of relationally aggressive boys

in middle childhood are also physically aggressive, physical aggression was accounting

for a large majority of the variance in rejection for boys who were also exhibiting

relational aggression (Crick, 1995; Rys & Bear, 1997). This is consistent with findings

that peer-nominated fighting behavior mediated the relation between 4-year behavior problems and 5-year social preference for boys, whereas peer-nominated sneaky behavior mediated for girls (Keane & Calkins, 2004). As a result, girls' covertly hostile behavior results in peer rejection for girls, whereas boys' openly hostile behavior results in peer rejection for boys.

Similarly, emotional reactivity has also been associated with failure in the peer context (Dougherty, 2006; Maszk, Eisenberg, & Guthrie, 1999). Peers may discontinue interactions with children displaying high, negative emotionality due to the aversive nature of their emotional expression (Dougherty, 2006). As such, children with high emotional reactivity are less well-liked by peers (Dougherty, 2006; Maszk et al., 1999), exhibit worse social skills (Eisenberg et al., 2004), and engage in more peer conflict (Calkins et al., 1999). A study examining display rules (i.e., social conventions regarding emotional expression) found emotional dissemblance during a disappointing lab task partially mediated the relation between a measure combining emotionality with effortful control and social adjustment (Liew et al., 2004). Children with high, parent-reported emotionality and low effortful control displayed more negative reactions to a disappointing lab task in the presence of an adult, which was then related to worse social adjustment. Thus, children with high emotional reactivity have difficulty following normative, emotional display rules, which impacts their overall social functioning.

Completing to pathway of socio-emotional functioning, there is strong empirical support for the association between aggression and low peer liking (Cairns et al., 1988; Cillessen & Mayeux, 2004; Coie et al., 1990) and between emotional reactivity and low

peer liking (Dougherty, 2006; Maszk et al., 1999; Liew et al., 2004). Negative emotional

expression including anger can cause aggressive behaviors (Eisenberg, Fabes, Carlo, &

Karbon, 1992; Shultz et al., 2004), resulting in a pattern of peer rejection (Cairns et al.,

1988; Cillessen & Mayeux, 2004; Coie et al., 1990). As such, peer liking will be

examined as a resulting consequence of children's aggressive behavior as determined by

the interaction between emotional reactivity and socialization of emotions (i.e., emotional

reactivity × socialization of emotions → aggression → low peer liking). Consistent with

the results from Study 1, a separate mediated moderation pathway was hypothesized for

boys and girls (Figure 1). For boys, the following pathway was predicted: Emotional

Reactivity × Distress Reactions → Physical Aggression → Low Peer Liking. For girls,

the following pathway was predicted: Emotional Reactivity × Minimization Reactions

→ Relational Aggression → Low Peer Liking.

CHAPTER VI

STUDY 2: METHODS

Participants and Procedures

Information on participants and procedures is identical to study 1.

Measures

Second grade peer liking. In addition to the measures described in Study 1, peer liking was assessed during the second grade school sociometric assessment. Peer liking was assessed with the peer nomination item, "Kids you like a lot." Scores for peer liking were standardized within classrooms.

CHAPTER VII

STUDY 2: RESULTS

Overview

Similar to study 1, all analyses are presented separately by gender due to predicted gender differences. First, intercorrelations and descriptive statistics among the variables of interest were examined. Following this step, a series of hierarchical linear regressions are presented to examine emotional reactivity and socialization of anger in the prediction of peer liking. Finally, mediational analyses—specifically examining general aggression, relational aggression, and physical aggression—were computed when conditions for mediated moderation described by Baron and Kenny (1986) and Muller, Judd, and Yzerbyt (2005) were met. Regression analyses are presented by first examining general aggression and then relational and physical aggression will be examined.

Descriptive Statistics and Intercorrelations

The descriptive statistics for all study variables are presented in Table 1. There were no gender differences and peer-nominated liking scores. Intercorrelations are presented in Table 2. Peer liking was negatively associated with coded emotional reactivity for boys only. As expected, peer liking was negatively related to all three forms of aggression (i.e., general aggression, physical aggression, and relational aggression) for both boys and girls. After controlling for physical aggression, relational

aggression was negatively associated with peer liking for girls only ($r = -.19$, $p < .05$; Table 3). Conversely, after controlling for relational aggression, physical aggression was negatively associated with peer liking for boys only ($r = -.20$, $p < .05$; Table 3).

Regressions Predicting Peer Liking

One hypothesis of the current study was that kindergarten maternal minimization of anger and distress reactions to anger would moderate the association between kindergarten emotional reactivity and 2nd grade peer liking. To examine this question, two hierarchical linear regressions with standardized β*s* and change in R^2 for each step are presented in Tables 8 and 9. Emotional reactivity as measured by coded emotional reactivity during the laboratory disappointment task is presented in Table 8 and emotional dissemblance, coded when the experimenter was present during the laboratory disappointment task, is presented in Table 9. The dependent variable for the regression analyses was 2nd grade, peer-nominated peer liking. Main effects for emotional reactivity, minimization, and distress were entered in the first step. Step 2 included all two-way interactions among the variables. Finally, the three-way interaction among emotional reactivity, minimization, and distress was entered in Step 3. When examining emotional dissemblance in Table 9, an additional step was added before all the predictors to partial out the effects of coded emotional reactivity before the experimenter returned to the room.

Consistent with the interaction between emotional reactivity and distress predicting general aggression (Table 4), the interaction between kindergarten coded emotional reactivity and distress predicted 2nd peer liking for boys only (Table 8). These

interactions satisfy the initial conditions needed to test for mediated moderation. Mediated moderation analyses are presented in the next section. In addition, the interaction between boys' and girls' coded emotional reactivity and minimization predicted 2nd grade peer liking. There were no significant interactions when examining emotional dissemblance and peer liking (Table 9).

The significant two-way interactions from Tables 8 were explored following methods outlined by Aiken and West (1991). The first two-way interaction was depicted in Figure 7 by plotting the regression of boys' 2nd grade peer liking (Y) on kindergarten coded emotional reactivity (X) as a function of two values of maternal distress reactions to anger, Z_L and Z_H (i.e., one standard deviation below the mean, one standard deviation above the mean). Unstandardized B's were used to calculate the regression lines. From the graph it is apparent that boys who are emotionally reactive tend to be less liked by peers when their mothers respond to child anger with low distress. Figure 8 depicts boys' peer liking as a function of the interaction between coded emotional reactivity and minimization. Maternal minimization is particularly problematic for peer liking when boys have high coded emotional reactivity (Figure 8).

The next step was to determine whether the slopes of the lines plotted in Figures 7 and 8 were different from zero, as outlined by Aiken and West (1991). For Figure 7, two new variables were created, Z_{cvh} and Z_{cvl}, such that each variable reflected the distress score minus Z_H and Z_L, respectively. The crossproduct of each new variable with emotional reactivity (X) was computed. Finally, peer liking was regressed on emotional reactivity, the conditional values of distress (i.e., Z_{cvh}, Z_{cvl}), and each crossproduct in two

separate regression analyses. Results revealed the slope for high distress in Figure 7 was not significantly different from zero (B = -.22, β = -.08, t = -.89, p = n.s.), whereas the slope for low distress was significantly different from zero (B = -1.50, β = -.57, t = -3.92, p < .001). Testing the lines in Figure 8 revealed that the slope for high minimization was significantly different from zero (B = -1.57, β = -.60, t = -3.24, p < .01). In contrast, the slope for low minimization was not different from zero (B = -.15, β = -.06, t = -.46, p = n.s.).

General Aggression Mediational Analyses

Based on the regressions examining general aggression, mediated moderation could be examined for boys coded emotional reactivity × distress → aggression → peer liking. To determine mediated moderation, several conditions must be met as outlined by Baron and Kenny (1986) and Muller, Judd, and Yzerbyt (2005). Three general equations will be presented to demonstrate mediated moderation. In the equations, *Y* refers to the dependent variable, *X* refers to the predictor variable, *Mo* refers to the moderating variable, and *Me* refers to the mediating variables. The first equation tests the overall effect on the outcome variable.

$$\text{Equation 1: } Y = \beta_{10} + \beta_{11}X + \beta_{12}Mo + \beta_{13}XMo + \varepsilon_1$$

In Equation 1, the interaction between the predictor and the moderator must be significant to test for mediated moderation. Likewise, the same interaction needs to significantly predict the mediator in equation 2.

$$\text{Equation 2: } Me = \beta_{20} + \beta_{21}X + \beta_{22}Mo + \beta_{23}XMo + \varepsilon_2$$

In a final equation, the interaction's effect on the dependent variable after controlling for the mediator is examined.

$$\text{Equation 3:} \quad Y = \beta_{30} + \beta_{31}X + \beta_{32}Mo + \beta_{33}XMo + \beta_{34}Me + \varepsilon_3$$

For mediated moderation to occur, β_{34} needs to significantly predict the dependent variable and β_{33} needs to either be non-significant or reduced compared to equation 1. When mediated moderation occurs, the effects of the interaction between the predictor and moderator on the dependent variable acts through the mediating variable.

Regressions examining the three equations presented above for a mediated moderation model predicting boys' peer liking is presented in Table 10. Results in Table 10 reveal that coded emotional reactivity interacted with distress to predict peer liking (outcome) and aggression (mediator), satisfying the first two conditions necessary in equations 1 and 2. Examination of the third equation revealed that after controlling for aggression, the interaction between coded emotional reactivity and distress was reduced to a marginal effect, while the mediator remained a significant predictor of peer liking. Next, the significance of the indirect path from reactivity $\times$ distress $\rightarrow$ aggression $\rightarrow$ peer liking was tested using Sobel's products of coefficients test (Sobel, 1982). Statistical significance was then determined by comparing the z' obtained from the Sobel test with the critical values table developed by MacKinnon, Lockwood, Hoffman, West, and Sheets (2002). This comparison indicated that boys' aggression significantly mediated the emotional reactivity $\times$ distress moderational effect on peer liking ($z' = 1.68$, p < .05).

Regressions Predicting Peer Liking after Controlling for Aggression

Next, a series of regressions were computed to determine the interaction between emotional reactivity and socialization of negative emotions as it predicted unique variance in peer liking after accounting for aggression. Step 1 partialled out variance associated with either relational or physical aggression so that unique variance in the dependent variable could be measured. Step 2 included all main effects (i.e., emotional reactivity, minimization, and distress). All two-way interactions were entered in Step 3. Finally, Step 4 included the three-way interaction among emotional reactivity, minimization, and distress. Similar to the analyses with general aggression, emotional reactivity was assessed using two separate measures: coded emotional reactivity during a laboratory disappointment task and coded emotional dissemblance during a laboratory disappointment task. All significant interactions were explored using techniques described by Aiken and West (1991).

For girls, coded emotional reactivity interacted with minimization to predict 2nd grade peer liking (Table 11). Inconsistent with other results, girls' emotional dissemblance interacted with distress to predict 2nd grade peer liking (Table 12). When boys' regressions were examined an interaction between coded emotional reactivity and minimization (Table 11) and an interaction between emotional dissemblance and minimization (Table 12) were significant predictors of peer liking. In addition, coded emotional reactivity interacted with distress to predict boys' peer liking (Table 11).

The interaction between girls' coded emotional reactivity and minimization predicting peer liking is presented in Figure 9. Consistent with previous analyses, emotional reactivity coupled with minimization resulted in the lowest peer liking score.

Follow-up analysis of the slopes revealed that the slope for high minimization was significantly different from zero (B = -.80, β = -.26, t = -2.26, p < .05), but the slope for low minimization was not significantly different from zero (B = .43, β = .14, t = 1.00, p = n.s.). Figure 10 displays the interaction between girls' emotional dissemblance and minimization predicting peer liking. From the graph it appears that the inability to hide emotions in the presence of the experimenter in addition to minimization resulted in the lowest peer liking score; however, neither slopes were significantly different from zero (high minimization: B = -.28, β = -.12, t = -.98, p = n.s.; low minimization: B = .23, β = .10, t = .81, p = n.s.). Similar to the graph for girls, high emotional reactivity coupled with high minimization resulted in the lowest peer liking score for boys (Figure 11). The slope for high minimization was significantly different from zero (B = -1.49, β = -.57, t = -3.16, p < .01), whereas the slope for low minimization was not significantly different from zero (B = -.20, β = -.08, t = -.65, p = n.s.). Minimization was similarly problematic for boys who were unable to hide negative emotions in the presence of an experimenter, resulting in low peer liking scores (Figure 12). However, the slope for high minimization in Figure 12 was not significantly different from zero (B = -.31, β = -.19, t = -1.11, p = n.s.). The slope for low minimization was marginally different from zero (B = .53, β = .29, t = 1.84, p < .10). Figure 13 shows that the combination of low emotional reactivity and low distress resulted in the highest peer liking score for boys. The slope for high distress was not significantly different from zero (B = -.43, β = -.17, t = -1.13, p = n.s.), but the slope for low distress was significantly different from zero (B = -1.26, β = -.48, t = -3.30, p < .01).

Relational and Physical Aggression Mediational Analyses

As described in the previous section on mediated moderation, two conditions must first be met before testing mediation. First, the interaction must predict the outcome, and then the same interaction must also predict the mediator. For girls, the interaction between coded emotional reactivity and minimization predicted both peer liking (i.e., outcome) and relational aggression (i.e., mediator). These conditions satisfy the initial requirements, and therefore, mediated moderation was tested for the following girls' pathway: coded emotional reactivity × minimization → relational aggression → peer liking. Results from regressions testing this mediated moderation pathway are presented in Table 13. As the table shows, when the mediator was entered as a predictor of peer liking in addition to the two-way interaction between emotional reactivity and minimization, the two-way interaction was no longer a significant predictor. Thus, coded emotional reactivity interacted with minimization to predict lower peer liking through relationally aggression behaviors. Statistical significance was then determined by comparing the z' obtained from the Sobel test with the critical values table developed by MacKinnon and colleagues (2002). This comparison indicated that girls' relational aggression significantly mediated the emotional reactivity × minimization interaction predicting peer liking ($z' = -1.57$, p < .05).

For boys, the interaction between coded emotional reactivity and distress predicted both peer liking (i.e., outcome) and physical aggression (i.e., mediator). These conditions satisfy the initial requirements, and therefore, mediated moderation was tested for the following boys' pathway: coded emotional reactivity × distress → physical

aggression → peer liking.   Results from regressions testing this mediated moderation pathway are presented in Table 14. When the mediator was entered in the regression predicting peer liking, the interaction between laboratory emotional reactivity and distress was no longer significant. The Sobel test was significant using the critical values table ($z' = 1.33$, p < .05). Although the effect of the interaction on the outcome was reduced when the mediator was entered, it is noteworthy that the mediator was no longer a significant predictor of peer liking after all the interaction terms were entered. Thus, all but one criterion was met for full mediated moderation.

CHAPTER VIII

STUDY 2: DISCUSSION

Results demonstrated that emotional reactivity interacted with maternal distress

and minimization to predict aggression; however, aggressive behavior does not exist in

isolation as aggression is associated with a range of maladaptive social outcomes (Cairns

et al., 1988; Cillessen & Mayeux, 2004; Coie et al., 1990). Specific to the current study,

peer liking was the social outcome measured. Overall, similar patterns emerged for the

outcome of peer liking as the patterns described above for the outcome of aggression.

For boys, general aggression mediated the interaction between laboratory coded

emotional reactivity and distress as it relates to peer liking. Namely, emotionally reactive

boys were less likely to exhibit aggressive behaviors in the context of high maternal

distress. This lower aggression was then related to higher peer liking in the classroom. A

similar mediated moderation pathway was found specifically for boys' physical

aggression. For emotionally reactive girls, mean relational aggression scores were lower

when mothers did not respond to anger with minimization. Completing the pathway,

lower relational aggression was then related to higher peer liking in the second grade

classroom. As a result, gender specific child by parent interactions were predictive of

two separate but parallel pathways of maladaptive behaviors for boys and girls. In

addition, there was some evidence that minimization was similarly problematic for

emotionally reactive boys when predicting peer liking but was not informative when

predicting boys' aggression. These findings suggest that although minimization of negative emotions is not specifically related to the development of boys' aggression, it does have negative consequences for other measures of adjustment such as peer liking.

Studies consistently find that aggressive behaviors including physical and relational aggression lead to problems in the peer environment. For example, after controlling for physical aggression, relational aggression was associated higher peer disliking and lower peer liking for girls only (Crick, 1996; Rys & Bear, 1997; LaFontana & Cillessen, 2002). Findings were not significant for boys mainly due to the overlap in relational and physical aggression; therefore, physical aggression was accounting for a large portion of the variance associated with peer liking. Boys with combined relational and physical aggression, however, were found to be more likely to be rejected in their classroom compared to non-aggressive boys (Henington et al., 1998). Aggression continues to affect social relationships over time as relational aggression was associated with increases in peer rejection between third and sixth grade for girls, whereas physical aggression was associated with increases for boys (Crick, 1996). This is consistent with findings that peer-nominated fighting behavior mediated the relation between behavior problems and peer success for boys, whereas peer-nominated sneaky behavior mediated for girls (Keane & Calkins, 2004). As a result, girls' covertly hostile behavior— relational aggression and sneaky behavior—is the mechanism by which girls are rejected, whereas boys' openly hostile behavior is the mechanism by which boys are rejected.

CHAPTER IX

GENERAL DISCUSSION

Overall, gender specific pathways to aggression and peer liking were supported by the data. Emotional reactivity was generally not predictive of maladaptive outcomes until it was examined within the context of specific maternal socialization of anger, namely maternal minimization and distress reactions to anger. Taking the findings from study 1 and study 2 together, a biopsychosocial model for the development of aggression and subsequent peer difficulties provides an overarching framework for these results. Similar to the framework outlined by Dodge and Pettit (2003) biological and environmental factors together provide the best explanation for the development of both relational and physical aggression in early childhood. The results from the current study demonstrate that a child's biological tendency to be emotionally reactive puts both girls and boys at risk for using aggression. However, this risk is not predictive without also understanding the socialization environment, and more specifically parents' reactions to their child's expression of anger. Moreover, specific socialization strategies help us understand when a child's emotional reactivity is channeled into a pattern of physical aggression and when it is channeled into a pattern of relational aggression. That is, emotional reactivity coupled with minimization leads to girls' relational aggression and lower peer liking. For boys, emotional reactivity coupled with low maternal distress reactions leads to general aggression, physical aggression, and low peer liking.

There are several limitations that should be noted. First, the mediator and the outcome variables were both measured in second grade using peer nominations. Thus, same reporter biases may be partially accounting for the mediational processes that were found. It is possible that second grade peers were nominating all the "bad kids" for all the negative categories and all the "good kids" for all the positive categories, resulting in high correlations without differentiating among the maladaptive categories. However, the correlations between aggression and peer liking ranged from -.23 to -.34, suggesting moderate associations and that children are differentiating among categories. Nonetheless, further studies examining additional measures of success with peers is recommended. Another limitation is that the effect sizes were quite small. For example, several follow-up analyses of slopes graphed for significant regression interactions were not significantly different from zero. However, the betas for the non-significant slopes were all in the expected directions, suggesting that more power was needed to detect some of the small effects. These small effect sizes suggest that other factors may be playing a larger role in shaping the development of relational and physical aggression. The small effect sizes also highlight the complexity of the development of aggression, which is likely the result of multiple factors leading to aggression (i.e., equifinality). Finally, due to the high correlation between boys' relational and physical aggression, similar results for physical and relational aggression would be expected. This was, however, not the case as the interaction between coded emotional reactivity and distress yielded opposite effects when predicting relational and physical aggression. Additional studies are needed to clarify if this opposite effect is in fact consistent across studies.

In addition to the studies recommended to address limitations, several possible follow-up studies emerge from the current results. First, gender differences in socialization practices could be examined more thoroughly. Namely, paternal socialization practices may provide important information, as maternal and paternal socialization of emotions often relate to different outcomes (Chaplin et al., 2005; Eisenberg et al., 1996; McElwain, Halberstadt, & Volling, 2007). Similarly, mothers who display relatively more physical coercion and fathers who display relatively more psychological coercion compared to the other parent tend to have daughters who display higher levels of relational aggression (Nelson, Hart, Yang, Olsen, & Jin, 2006). Thus, consideration of mother and father parenting strategies together provides information about the developmental of aggression. In addition, observations of socialization strategies coded during laboratory tasks could provide further insight into how and when socialization strategies differ by gender and how this relates to relational and physical aggression. Likewise, emotional reactivity to specific types of situations may help understand the pathway to aggression and peer problems. Studies have shown that relationally aggressive children are more reactive to relational provocations and physically aggressive children are more reactive to instrumental provocations (Crick et al., 2002). As a result, the emotional reaction to specific anger-provoking situations is an area that needs further investigation. In addition, it is suspected that emotionally reactive girls who are taught to minimize emotions remain internally emotionally aroused, either physiologically or with negative cognitions. This internal and external mismatch of emotional arousal may be a marker for a range of maladaptive outcomes especially in

light of the low correspondence between different indices of arousal (Hubbard et al., 2004). These physiological and cognitive mediating pathways could be explicitly tested to confirm continued arousal despite the lack of corresponding outward display of negative affect and negative vocalizations.

Specific to physical aggression, more research is needed to explain why moderate levels of distress reactions buffers against the development of aggression for emotionally reactive boys. A sample where more extreme levels of distress are reported may help to make sense of these results. With respect to relational aggression, cognitive processes that mediate the relation between the experience of anger and the delayed use of relational aggression may help elucidate specific processes that lead to the expression of relational aggression. For example, a study of social information processing found that a group of children with comorbid physical and relational aggression displayed the highest levels of hostile attributions to ambiguous situations (Crick, 1995). Moreover, relationally aggressive children displayed hostile attributions biases in the context of relational provocations, whereas physically aggressive children displayed hostile attribution biases in the context of instrumental provocations (Crick et al., 2002).

Additional studies at later developmental periods are also needed to help understand relational and physical aggression as they change in frequency and in form. Bjorkqvist and colleagues found that there is a peak in relational aggression around 11 years of age for girls and around 15 years of age for boys (Bjorkqvist, Lagerspetz, & Kaukiainen, 1992; Bjorkqvist, Osterman, & Kaukiainen, 1992). This finding implies that relational aggression is increasing between second and fifth grade for girls and between

second and ninth grade for boys, although these developmental findings also need future study. It is plausible to conceive that the children who are becoming more relationally aggressive after second grade are doing so for different reasons than those reason outlined in this study. For example, changes in the peer environment may directly cause some children to display more relational aggression, independent of maternal socialization of anger. Moreover, the children who are relationally aggressive in second grade may be fundamentally different from the children who don't start becoming relationally aggressive until later, and as a result they may display different levels of temperamental emotional reactivity. Just like many indices of socio-emotional functioning, relational and physical aggression are developmental phenomenon that are changing as children develop new skills and are faced with new challenges. Thus, consideration of different developmental precursors and pathways across time is needed.

In conclusion, this study sought to examine the pathway from emotional reactivity to aggression to low peer liking, with socialization of anger identified as a moderating factor accounting for gender specific patterns of relational and physical aggression. Support for separate mediated moderation pathways for girls and boys was established. For boys, the following pathway emerged: emotional reactivity × distress reactions to anger → general aggression (relational and physical aggression averaged) → low peer liking. As similar pathway emerged specific to boys' physical aggression. For girls, the following pathway emerged: emotional reactivity × minimization reactions to anger → relational aggression → low peer liking. These interactions suggest a model of goodness-of-fit, incorporating a child's biological tendency to be reactive and a child's

socialization environment, is relevant for the prediction of socio-emotional outcomes.

Additional studies are needed to better understand other moderating factors and

developmental changes in relational and physical aggression.

REFERENCES

Achenbach, T. M. (1992). *Manual for the Child Behavior Checklist/2-3 & 1992 Profile.*

Burlington, VT: University of VT Department of Psychiatry.

Adler, P. A., & Adler, P. (1998). *Peer power: Preadolescent culture and identity.* New

Brunswick, NJ: Rutgers University Press.

Aiken, L. A., & West, S. G. (1991). *Multiple regression: Testing and interpreting*

interactions. Thousand Oaks, CA: Sage Publications.

Azmitia, M., Kamprath, N. A., & Linnet, J. (1998). Intimacy and conflict: The dynamics

of boys' and girls' friendships during middle childhood and early adolescence. In

L. H. Meyer, H. Park, M. Grenot-Scheyer, I. S. Schwartz, & B. Harry (Eds.),

Making Friends: The influence of culture and development (pp. 171-187).

Baltimore, MD: Paul H. Brookes Publishing.

Bandura, A. (1973). *Aggression: A social learning analysis.* New York: Holt.

Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in

social psychological research: Conceptual, strategic, and statistical

considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.

Bates, J.E. (2000). Temperament as an emotion construct: Theoretical and practical

issues. In M. Lewis and J.M. Haviland-Jones (Eds.), *Handbook of Emotions, 2nd*

Edition (pp. 382-396). New York: Guilford Press.

Bates, J. E., Bayles, K., Bennett, D. S., Ridge, B., & Brown, M. M. (1991). Origins of

externalizing behavior problems at eight years of age. In D. Pepler & K. Rubin

(Eds.), *Development and treatment of childhood aggression* (pp. 93-120).

Hillsdale, NJ: Erlbaum.

Berndt, T. J. (1982). The features and effects of friendship in early adolescence. *Child Development, 53*, 1447-1460.

Bird, A., Reese, E., & Tripp, G. (2006). Parent-child talk about past emotional events: Associations with child temperament and goodness-of-fit. *Journal of Cognition and Development, 7*, 189-210.

Bjorkqvist, 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,* 117-127.

Bjorkqvist, K., Osterman, K., & Kaukiainen, A. (1992). The development of direct and indirect aggressive strategies in males and females. In K. Bjorkqvist, & P. Niemela (Eds.), *Of mice and women: Aspects of female aggression* (pp. 51-64). San Diego: Academic Press.

Block, J. H. (1983). Differential premises arising from differential socialization of the sexes: Some conjectures. *Child Development, 54*, 1335-1354.

Blyth, D. A., & Foster-Clark, F. S. (1987). Gender differences in perceived intimacy with different members of adolescents' social networks. *Sex Roles, 17*, 689-718.

Bosacki, S. L. (2003). Psychological pragmatics in preadolescents: Sociomoral understanding, self-worth, and school behavior. *Journal of Youth and Adolescence, 32*, 141-155.

Brennan, P.A., Hall, J., Bor, W., Najman, J.M., & Williams, G. (2003). Integrating biological and social processes in relation to early-onset persistent aggression in boys and girls. *Developmental Psychology, 39*, 309-323.

Brody, L. R. (2000). The socialization of gender differences in emotional expression: Display rules, infant temperament, and differentiation. In A. H. Fischer (Ed.), *Gender and emotion: Social psychological perspectives* (pp. 24-47). New York: Cambridge University Press.

Bronstein, P., Briones, M., Brooks, T., & Cowan, B. (1996). Gender and family factors as predictors of late adolescent emotional expressiveness and adjustment: A longitudinal study. *Sex Roles, 34*, 739-765.

Brown, L. M. (1998). *Raising their voices*. Cambridge, Massachusetts: Harvard University Press.

Buck, R. (1984). *The communication of emotion*. New York: Guilford Press.

Buhrmester, D., & Furman, W. (1987). The development of companionship and intimacy. *Child Development, 58*, 1101-1113.

Cairns, R. B., Cairns, B. D., Neckerman, H. J., Ferguson, L. L., & Gariepy, J. L. (1989). Growth and aggression: 1. Childhood to early adolescence. *Developmental Psychology, 25*, 320-330.

Cairns, R. B., Cairns, B. D., Neckerman, H. J., Gest, S. D., & Gariepy, J. (1988). Social networks and aggressive behavior: Peer support or peer rejection? *Developmental Psychology, 24*, 815-823.

Caldwell, M. A., & Peplau, L. A. (1982). Sex differences in same-sex friendship. *Sex Roles, 8*, 721-732.

Calkins, S. D., Dedmon, S. E., Gill, K. L., Lomax, L. E., & Johnson, L. M. (2002). Frustration in infancy: Implications for emotion regulation, physiological processes, and temperament. *Infancy, 3*, 175-197.

Calkins, S. D., & Degnan, K. A. (2006). Temperament in early development. In R. Ammerman (Ed.) *Comprehensive Handbook of Personality and Psychopathology: Vol. 3. Child Psychopathology* (pp. 64-84). Hoboken, NJ: John Wiley & Sons, Inc.

Calkins, S. D., Gill, K. L., Johnson, M. C., & Smith, C. L. (1999). Emotional reactivity and emotional regulation strategies as predictors of social behavior with peers during toddlerhood. *Social Development, 8*, 310-334.

Campbell, S. B. (1997). Behavior problems in preschool children: Developmental and family issues. In T. H. Ollendick & R. J. Prinz (Eds.), *Advances in Clinical Child Psychology* (Vol. 19. pp. 1-26). New York: Plenum.

Campbell, S. B., Pierce, E. W., Moore, G., Marakovitz, S., & Newby, K. (1996). Boys' externalizing problems at elementary school age: Pathways from early behavior problems, maternal control, and family stress. *Development and Psychopathology*, 8, 701-719.

Campbell, S. B., Shaw, D. S., & Gilliom, M. (2000). Early externalizing behavior problems: Toddlers and preschoolers at risk for later maladjustment. *Development and Psychopathology,* 12, 467-488.

Campbell, S. B., Spieker, S., Burchinal, M., Poe, M. D., & The NICHD Early Child Care

Research Network (2006). Trajectories of aggression from toddlerhood to age 9

predict academic and social functioning through age 12. *Journal of Child

Psychology and Psychiatry, 47*, 791-800.

Caspi, A., Henry, B., Mcgee, R., Moffitt, T. & Silva, P. (1995). Temperamental origins

of child

and adolescent behavior problems: From age three to fifteen. *Child

Development, 66*,

55-68.

Cervantes, C. A., & Callanan, M. A. (1998). Labels and explanations in mother-child

emotion talk: Age and gender differentiation. *Developmental Psychology, 34*,

88-98.

Chaplin, T. M., Cole, P. M., & Zahn-Waxler, C. (2005). Parental socialization of

emotion expression: Gender differences and relations to child adjustment.

Emotion, 5, 80-88.

Cillessen, A. H. N., & Borch, C. (2006). Developmental trajectories of adolescent

popularity: A growth curve modelling analysis. *Journal of Adolescence, 29*, 935-

959.

Cillessen, A. H. N., & Mayeux, L. (2004). From censure to reinforcement:

Developmental changes in the association between aggression and social status.

Child Development, 75, 147-163.

Coie, J. D., Dodge, K. A., & Coppotelli, H. (1982). Dimensions and types of social

   status: A cross-age perspective. *Developmental Psychology, 18*, 557-570.

Coie, J.D., Dodge, K.A., & Kupersmidt, J. B. (1990). Peer group behavior and social

   status. In S. R., Asher and J.D. Coie (eds.), *Peer rejection in childhood*.

   Cambridge, England: Cambridge University Press.

Cole, P. M., Zahn-Waxler, C., & Smith, K. D. (1994). Expressive control during a

   disappointment: Variations related to preschoolers behavior problems.

   Developmental Psychology, 30, 835-846.

Conway, A. M. (2005). Girls, aggression, and emotion regulation. *American Journal of*

   Orthopsychiatry, 75, 334-339.

Craig, W. M. (1998). The relationship among bullying, victimization, depression,

   anxiety, and aggression in elementary school children. *Personality and*

   Individual Differences, 24, 123-130.

Crick, N. R. (1995). Relational aggression: The role of intent attributions, feelings of

   distress, & provocation types*. Development and Psychopathology, 7,* 313-322.

Crick, N. R. (1996). The role of overt aggression, relational aggression, and prosocial

   behavior in the prediction of children's future social adjustment. *Child*

   Development, 67, 2317-2327.

Crick, N. R. (1997). Engagement in gender normative versus nonnormative forms of

   aggression: Links to social-psychological adjustment. *Developmental*

   Psychology, 33, 610-617.

Crick, N. R., Bigbee, M. A., & Howes, C. (1996). Gender differences in children's

normative beliefs about aggression: How do I hurt thee? Let me count the ways.

Child Development, 67, 1003-1014.

Crick N. R., Casas, J. F., & Mosher, M. (1997). Relational and overt aggression in

preschool. *Developmental Psychology, 33*, 579-588.

Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-

psychological adjustment. *Child Development, 66*, 710-722.

Crick, N. R., Grotpeter, J. K., & Bigbee, M. A. (2002). Relationally and physically

aggressive children's intent attributions and feelings of distress for relational and

instrumental peer provocations. *Child Development, 73*, 1134-1142.

Crick, N. R., & Werner, N. E. (1998). Response decision processes in relational and

overt aggression. *Child Development, 69*, 1630-1639.

Crick, N. R., Werner, N. E., Casas, J. F., O'Brien, K. M., Nelson, D. A., Grotpeter, J. K.,

et al. (1999). Childhood aggression and gender: A new look at an old problem.

In R. A. Dienstbier (Series Ed.) & D. Bernstein (Vol. Ed.), *Nebraska symposium*

on motivation: Vol. 45 Gender and motivation (pp. 75-141). Lincoln, NE:

University of Nebraska Press.

Crothers, L. M., Field, J. E., & Kolbert, J. B. (2005). Navigating power, control, and

being nice: Aggression in adolescent girls' friendships. *Journal of Counseling*

and Development, 83, 349-354.

David, C. F., & Kistner, J. A. (2000). Do positive self-perceptions have a "dark side"? Examination of the link between perceptual bias and aggression. *Journal of Abnormal Child Psychology, 28*, 327-337.

Davis, T. (1995). Gender differences in masking negative emotions: Ability or motivation? *Developmental Psychology, 31*, 660-667.

Denham, S. A. (1986). Social cognition, prosocial behavior, and emotion in preschoolers: Contextual validation. *Child Development, 57*, 194-201.

Dodge, K. A. (1983). Behavioral antecedents of peer social status. *Child Development, 54*, 1386-1399.

Dodge, K. A., Lansford, J. E., Burks, V. S., Bates, J. E., Pettit, G. S., Fontaine, R., & Price, J. M. (2003). Peer rejection and social information-processing factors in the development of aggressive behavior problems in children. *Child Development*, 74, 374-393.

Dodge, K.A., & Pettit, G.S. (2003). A biopsychosocial model of the development of chronic conduct problems in adolescence. *Developmental Psychology, 39*, 349-371.

Dougherty, L. R. (2006). Children's emotionality and social status: A meta-analytic review. *Social Development, 15*, 394-417.

Eagly, A. H., & Steffen, V. J. (1986). Gender and aggressive behavior: A meta-analytic review of the social psychological literature. *Psychological Bulletin, 100*, 309-330.

Eder, D., & Hallinan, M. T. (1978). Sex differences in children's friendships. *American Sociological Review, 43*, 237-250.

Eisenberg, N., Cumberland, A., & Spinrad, T. L. (1998). Parental socialization of emotion. *Psychological Inquiry, 9*, 241-273.

Eisenberg, N., & Fabes, R. A. (1994). Mothers' reactions to children's negative emotions: Relations to children's temperament and anger behavior. *Merrill-Palmer Quarterly, 40,* 138-156.

Eisenberg, N., Fabes, R. A., Carlo, G., & Karbon, M. (1992). Emotional responsivity to others: Behavioral correlates and socialization antecedents. In N. Eisenberg & R. A. Fabes (Vol. Eds.), *Emotion and its regulation in early development: Vol. 55* (pp. 57-73). San Francisco: Jossey-Bass Publishers.

Eisenberg, N. Fabes, R. A., Bernzweig, J., Karbon, M., Poulin, R., & Hanish, L. (1993). The relations of emotionality and regulation to preschoolers' social skills and sociometric status. *Child Development, 64*, 1418-1438.

Eisenberg, N., Fabes, R. A., Carlo, G., Troyer, D., Speer, A. L., Karbon, M., & Switzer, G. (1992). The relations of maternal practices and characteristics to children's vicarious emotional responsiveness. *Child Development, 63*, 583-602.

Eisenberg, N., Fabes, R. A., & Murphy, B. C. (1996). Parents' reactions to children's negative emotions: Relations to children's social competence and comforting behavior. *Child Development, 67*, 2227-2247.

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., Fabes, R. A., Shepard, S. A., Murphy, B. C., Guthrie, I. K., Jones, S., et al. (1997). Contemporaneous and longitudinal prediction of children's social functioning from regulation and emotionality. *Child Development, 68*, 642-664.

Eisenberg, N., Liew, J., & Pidada, S. U. (2004). The longitudinal relations of regulation and emotionality to quality of Indonesian children's socioemotional functioning. *Developmental Psychology, 40*, 790-804.

Eisenberg, N., Losoya, S., Fabes, R.A., Guthrie, I. K., Reiser, M., Murphey, B. et al. (2001). Parental socialization of children's dysregulated expression of emotion and externalizing problems. *Journal of Family Psychology, 15,* 183-205.

Fabes, R. A., Eisenberg, N., & Bernzweig, J. (1990). *Coping with Children's Negative Emotions Scale (CCNES): Description and Scoring*. Tempe, AZ: Arizona State University.

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.

Fabes, R. A., Poulin, R. E., Eisenberg, N., & Madden-Derdich, D. A. (2002). The coping with children's negative emotions scale (CCNES): Psychometric properties and relations with children's emotional competence. *Marriage and Family Review, 34*, 285-310.

Fine, G. A. (1977). Social components of children's gossip. *Journal of Communication,*
　　27, 181-185.

Frith, H. (2004). The best of friends: The politics of girls' friendships. *Feminism and*
　　Psychology, 14, 357-360.

Goldsmith, H. H., Reilly, J., Lemery, K. S., Longley, S., & Prescott, A. (1995). *The*
　　laboratory temperament assessment battery: Preschool version 0.5 (LAB-TAB).
　　University of Wisconsin.

Gross, J., & Levenson, R. W. (1997). Hiding emotions: The acute effects of inhibiting
　　negative and positive emotion. *Journal of Abnormal Psychology, 106*, 95-103.

Grotpeter, J. K., & Crick, N. R. (1996). Relational aggression, overt aggression, and
　　friendship. *Child Development, 67*, 2328-2338.

Henington, C., Hughes, J. N., Cavell, T. A., & Thompson, B. (1998). The role of
　　relational aggression in identifying aggressive boys and girls. *Journal of School*
　　Psychology, 36, 457-477.

Hinshaw, S.P. (2002). Process, mechanism, and explanation related to externalizing
　　behavior in developmental psychopathology. *Journal of Abnormal Child*
　　Psychology, 30, 431-446.

Hubbard, J.A., Parker, E.H., Ramsden, S.R., Flanagan, K.D., Relyea, N., Dearing, K.F.,
　　Smithmyer, C.M., Simons, R.F., & Hyde, C.T. (2004). The relations among
　　observational, physiological, and self-report measures of children's anger. *Social*
　　Development, 13, 15-39.

Keane, S. P., & Calkins, S. D. (2004). Predicting kindergarten peer social status from

    toddler and preschool problem behavior. *Journal of Abnormal Child Psychology,*

    32, 409-423.

LaFontana, K. M., & Cillessen, A. H. N. (2002). Children's perceptions of popular and

    unpopular peers: A multimethod assessment. *Developmental Psychology, 38*,

    635-647.

Letendre, J. (2007). "Sugar and spice but not always nice": Gender socialization and its

    impact on development and maintenance of aggression in adolescent girls. *Child*

    and Adolescent Social Work Journal, 24, 353-368.

Litch, M. H. (1995). Multiple regression and correlation. In L. G. Grimm & P. R.

    Yarnold (Eds.), *Reading and understanding multivariate statistics* (pp. 19 –

    64).Washington, DC: American Psychological Association.

Liew, J., Eisenberg, N., & Reiser, M. (2004). Preschoolers' effortful control and negative

    emotionality, immediate reactions to disappointment, and quality of social

    functioning. *Journal of Experimental Child Psychology, 89*, 298-319.

Loukas, A., Paulos, S. K., & Robinson, S. (2005). Early adolescent social and overt

    aggression: Examining the roles of social anxiety and maternal psychological

    control. *Journal of Youth and Adolescence, 34*, 335-345.

Loveland, J.M., Lounsbury, J.W., Welsh, D., & Buboltz, W.C. (2007). The validity of

    physical aggression in predicting adolescent academic performance. *British*

    Journal of Educational Psychology, 77, 167-176.

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002).

    A comparison of methods to test mediation and other intervening variable effects.

    Psychological Methods, 7, 83-104.

Marsee, M.A., & Frick, P.J. (2007). Exploring the cognitive and emotional correlates to

    proactive and reactive aggression in a sample of detained girls. Journal of

    Abnormal *Child Psychology, 35*, 969-981.

Maszk, P., Eisenberg, N., & Guthrie, I. K. (1999). Relations of children's social status to

    their emotionality and regulation: A short-term longitudinal study. *Merrill-*

    Palmer Quarterly, 45, 468-492.

McElwain, N. L., Halberstadt, A. G., & Volling, B. L. (2007). Mother- and father-

    reported reactions to children's negative emotions: Relations to young children's

    emotional understanding and friendship quality. Child Development, 78, 1407-

    1425.

McKnight, K., & Putallaz, M. (2005). A relationship focus on girls' aggressiveness and

    conduct disorder. In D. J. Pepler, K. C. Madsen, C. Webster, & K. S. Levene

    (Eds.), *The development and treatment of girlhood aggression* (pp. 47-52).

    Mahwah, New Jersey: Lawrence Erlbaum Associates.

Miller, P. M., Danaher, D. L., & Forbes, D. (1986). Sex-related strategies for coping

    with interpersonal conflict in children aged five and seven. *Developmental*

    Psychology, 22, 543-548.

Moffitt, T. E. (2003). Life-course-persistent and adolescence-limited antisocial behavior:

    A 10-year research review and a research agenda. In B.B. Lahey, T.E. Moffitt, &

A. Caspi (Eds.), *Causes of conduct disorder and juvenile delinquency* (pp. 49-75). New York, NY: Guilford Press.

Muller, D., Judd, C. M, & Yzerbyt, V. Y. (2005). When moderation is mediated and mediation is moderated. *Journal of Personality and Social Psychology, 89*, 852-863.

Murray-Close, D., Ostrov, J.M., & Crick, N.R. (2007). A short-term longitudinal study of growth of relational aggression during middle childhood: Associations with gender, friendship intimacy, and internalizing problems. *Development and Psychopathology, 19*, 187-203.

Nelson, D. A., & Crick, N. R. (2002). Parental psychological control: Implications for childhood physical and relational aggression. In B. K. Barber (Ed.), *Intrusive parenting: How psychological control affects children and adolescents* (pp. 161-189). Washington. DC: The American Psychological Association.

Nelson, D.A., Hart, C.H., Yang, C., Olsen, J.A., & Jin, S. (2006). Aversive parenting in China: Associations with child physical and relational aggression. *Child Development, 77*, 554-572.

Oldehinkel, A. J., Hartman, C. A., de Winter, A. F., Veenstra, R., & Ormel, J. (2004). Temperament profiles associated with internalizing and externalizing problems in preadolescence. *Development and Psychopathology*, *16,* 421-440.

Owens, L., Shute, R., & Slee, P. (2000a). "Guess what I just heard!" Indirect aggression among teenage girls in Australia. *Aggressive Behavior, 26*, 67-83.

Owens, L., Shute, R., & Slee, P. (2000b). "I'm in and you're out…" Explanations for

  teenage girls' indirect aggression. *Psychology, Evolution & Gender, 2*, 19-46.

Paquette, J. A, & Underwood, M. K. (1999). Gender differences in young adolescents'

  experiences of peer victimization: Social and physical aggression. *Merrill-*

  Palmer Quarterly, 45, 242-266.

Park, J., Essex, M. J., Zahn-Waxler, C., Armstrong, J. M., Klein, M. H., & Goldsmith, H.

  H. (2005). Relational and overt aggression in middle childhood: Early child and

  family risk factors. *Early Education & Development, 16,* 233-257.

Parker, J. G., Low, C. M., Walker, A. R., & Gamm, B. K. (2005). Friendship jealousy in

  young adolescents: Individual differences and links to sex, self-esteem,

  aggression, and social adjustment. *Developmental Psychology, 41*, 235-250.

Petrie, K.J., Booth, R.J., & Pennebaker, J.W. (1998). The immunological effects of

  thought suppression. *Journal of Personality and Social Psychology, 75*, 1264-

  1273.

Prinstein, M. J., Boergers, J., & Vernberg, E. M. (2001). Overt and relational aggression

  in adolescents: Social-psychological adjustment of aggressors and victims.

  Journal of Clinical Child Psychology, 30, 479-491.

Prinstein, M.J., & La Greca, A.M. (2004). Childhood peer rejection and aggression as

  predictors of adolescent girls' externalizing and health risk behaviors: A 6-year

  longitudinal study. *Journal of Consulting and Clinical Psychology, 72*, 103-112.

Prior, M., Smart, D., Sanson, A., Pedlow, R., & Oberklaid, F. (1992). Transient versus

stable

behavior problems in a normative sample: Infancy to school age. *Journal of Pediatric*

    Psychology, 17, 423-443.

Rosenberg, F. R., & Simmons, R. G. (1975). Sex differences in the self-concept in

    adolescence. *Sex Roles, 1*, 147-159.

Rothbart, M. K., Ahadi, S. A., Hershey, K. L., & Fisher, P. (2001). Investigation of

    temperament at three to seven years: The children's behavior questionnaire.

    Child Development, 72, 1394-1408.

Rothbart, M. K., & Bates, J. E. (2006). Social, emotional, and personality development.

    In N. Eisenberg, W. Damon, and R. M. Lerner (eds.), *Handbook of child

    psychology*, Vol. 3, 6th ed. (pp. 99-166). Hoboken, NJ: John Wiley & Sons Inc.

Rubin, K. H., Burgess, K. B., Dwyer, K. M., & Hastings, P. D. (2003). Predicting

    preschoolers' externalizing behavior from toddler temperament, conflict, and

    maternal negativity. *Developmental Psychology*, 39, 164-176.

Rys, G. S., & Bear, G. G. (1997). Relational aggression and peer relations: Gender and

    developmental issues. *Merrill-Palmer Quarterly, 43*, 87-106.

Saarni, C. (1985). Indirect processes in affect socialization. In M. Lewis and C. Saarni

    (Eds.), *The socialization of emotion* (pp. 187-209). New York: Plenum.

Saarni, C. (1993). Socialization of emotion. In M. Lewis & J. M. Haviland (Eds.),

    Handbook of Emotions (pp. 435-460). New York: Guilford Press.

Saarni, C. & Weber, H. (1999). Emotional displays and dissemblance in childhood:

    Implications for self-presentation. In P. Philippot, R. S. Feldman, & E. J. Coats

(Eds.), *The social context of nonverbal behavior* (pp. 71-105). New York:

Cambridge University Press.

Sandstrom, M.J. (2007). A link between mothers' disciplinary strategies and children's

relational aggression. *British Journal of Developmental Psychology, 25*, 399-407.

Sanson, A., Hemphill, S. A., & Smart D. (2004). Connections between temperament and

social development: A review. *Social Development, 13*, 142-170.

Schoppe-Sullivan, S.J., Mangelsdorf, S.C., & Brown, G.L. (2007). Goodness-of-fit in

family context: Infant temperament, marital quality, and early coparenting

behavior. *Infant Behavior and Development, 30*, 82-96.

Schultz, D., Izard, C. E., & Bear, G. (2004). Children's emotion processing: Relations to

emotionality and aggression. *Development and Psychopathology, 16*, 371-387.

Schwartz, D., Gorman, A.H., Nakamoto, J., & McKay, T. (2006). Popularity, social

acceptance, and aggression in adolescent peer groups: Links with academic

performance and school attendance. *Developmental Psychology, 42*, 1116-1127.

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2001). *Experimental and quasi-*

experimental designs for generalized causal inference. Boston: Houghton

Mifflin.

Shaw, D., Owens, E., Giovannelli, J., & Winslow, E. (2001). Infant and toddler
pathways

leading to early externalizing disorders*. Journal of the American Academy of
Child and*

Adolescent Psychiatry, 40, 36-43.

Shields, A., & Cicchetti, D. (1997). Emotion regulation among school-age children: The
  development and validation of a new criterion Q-sort scale. *Developmental
  Psychology, 33*, 906-916.

Shields, A., & Cicchetti, D. (2001). Parental maltreatment and emotion dysregulation as
  risk factors for bullying and victimization in middle childhood. *Journal of
  Clinical Child Psychology, 30*, 349-363.

Sobel, M. E. (1982). Asymptotic intervals for indirect effects in structural equations
  models. In S. Leinhart (Ed.), *Sociological methodology 1982* (pp.290-312). San
  Francisco: Jossey-Bass.

Talbott, E., Celinska, D., Simpson, J., & Coe, M.G (2002). "Somebody else making
  somebody else fight": Aggression and the social context among urban adolescent
  girls. *Exceptionality, 10*, 203-220.

Terry, R. (2000). Recent advances in measurement theory and the use of sociometric
  techniques. In A. H. N. Cillessen & W. M. Bukowski (Eds.), *Recent advances in
  the measurement of acceptance and rejection in the peer system. New direction
  for child and adolescent development.* (pp. 27-53). San Francisco: Jossey-Bass
  Inc.

Thomas, A., & Chess, S. (1977). *Temperament and development*. New York: Brunner
  Mazel.

Tomada, G., & Schneider (1997). Relational aggression, gender, and peer acceptance:
  Invariance across culture, stability over time, and concordance among informants.
  Developmental Psychology, 33, 601-609.

Underwood, M. K. (2003). *Social aggression among girls*. New York: Guilford Press.

Underwood, M. K., Coie, J. D., & Herbsman, C. R. (1992). Display rules for anger and aggression in school-age children. *Child Development, 63*, 366-380.

Underwood, M. K., Galen, B. R., & Paquette, J. A. (2001). Top ten challenges for understanding gender and aggression in children: Why can't we all just get along? *Social Development, 10*, 248-266.

Underwood, M. K., Hurley, J. C., Johanson, C. A., & Mosley, J. E. (1999). An experimental, observational investigation of children's responses to peer provocation: Developmental and gender differences in middle childhood. *Child Development, 70,* 1428-1446.

van Aken, C., Junger, M., Verhoeven, M., van Aken, M.A.G., & Dekovic, M. (2007). The interactive effects of temperament and maternal parenting on toddlers' externalizing behaviours. *Infant and Child Development, 16*, 553-572.

Zahn-Waxler, C., Cole, P. M., & Barrett, K. C. (1991). Guilt and empathy: Sex differences and implications for the development of depression. In J. Garber & K. A. Dodge (Eds.), *The development of emotion regulation and dysregulation*. Cambridge Studies in Social and Emotional Development. Cambridge: Cambridge University Press.

Zimmer-Gembeck, M. J., Geiger, T. C., & Crick, N. R. (2005). Relational and physical aggression, prosocial behavior, and peer relations: Gender moderation and bidirectional associations. *Journal of Early Adolescence, 25*, 421-452.

Table 1

Descriptive Statistics

	N	M	SD	Min	Max
Boys					
K ER (Parent)	**163**	**2.00**	**.37**	**1.13**	**3.20**
K Coded ER	152	1.59	.33	.75	2.67
K Coded ED	**141**	**1.46**	**.52**	**.33**	**3.00**
K Anger Minimization (Parent)	163	2.82	1.51	1.00	7.00
K Anger Distress (Parent)	163	2.17	.99	1.00	5.00
2nd Grade Aggression (RA/PA Mean) (Peer)	**117**	**.27**	**.92**	**-1.19**	**2.77**
2nd Grade PA (Peer)	**117**	**.36**	**1.09**	**-1.34**	**2.99**
2nd Grade RA (Peer)	**115**	**.17**	**.85**	**-1.08**	**2.55**
2nd Grade Peer Liking (Peer)	117	.03	.94	-2.10	2.31
Girls					
K ER (Parent)	**182**	**1.85**	**.37**	**1.13**	**3.13**
K Coded ER	175	1.50	.32	.50	2.60
K Coded ED	**173**	**1.29**	**.53**	**.33**	**3.00**
K Anger Minimization (Parent)	181	2.88	1.29	1.00	7.00
K Anger Distress (Parent)	181	2.08	.98	1.00	6.00
2nd Grade Aggression (RA/PA Mean) (Peer)	**142**	**.51**	**.36**	**-.24**	**1.62**
2nd Grade PA (Peer) [a]	**142**	**.45**	**.39**	**-.39**	**1.59**
2nd Grade RA (Peer) [a]	**141**	**.58**	**.40**	**-.44**	**1.66**
2nd Grade Peer Liking (Peer)	142	.12	.99	-1.97	2.00

Note. [a] = LN transformation computed to normalize data. Bolded variables indicate significant mean gender differences. Gender differences were computed prior to transformations. K = Kindergarten. ER = Emotional Reactivity. ED = Emotional Dissemblance. RA = relational aggression. PA = physical aggression. Reporter is listed in parentheses.

Table 2

Correlations Among Variables

	1	2	3	4	5	6	7	8	9
1. K ER (Parent)	-	.19*	.22**	.18*	.30***	.14†	.16†	.09	-.22*
2. K Coded ER	.02	-	.57***	.00	-.02	-.13	-.17*	-.05	-.05
3. K Coded ED	.14†	.65***	-	.08	.01	.12	.08	.13	-.07
4. K Minimize	.06	-.03	-.06	-	**.44*****	.02	.01	.02	-.06
5. K Distress	.46***	.03	-.00	**.17***	-	-.00	-.01	-.00	-.08
6. 2nd Aggression	.23*	-.00	.04	.15	.05	-	.90***	.91***	-.36***
7. 2nd PA	.21*	.00	.04	.14	.05	.96***	-	**.63*****	-.31***
8. 2nd RA	.23*	-.02	.04	.15	.06	.94***	**.81*****	-	-.34***
9. 2nd Peer Liking	-.21*	-.25*	-.16	-.04	-.11	-.29**	-.31**	-.23*	-

Note. † $p < .10$. * $p \leq .05$. ** $p < .01$. *** $p < .001$. Boys are below the diagonal and girls are above the diagonal. K = Kindergarten. ER = Emotional Reactivity. ED = Emotional Dissemblance. PA = Physical Aggression. RA = Relational Aggression. Bolded correlations have significant gender differences using the Fisher's *r*-to-*z* transformation.

Table 3

Partial Correlations Controlling for Either Physical Aggression or Relational

Aggression

	K ER (Parent)	K Coded ER	K Coded ED	K Minimize	K Distress	2nd Peer Liking
Boys						
2nd PA	.03	.00	.02	.03	.00	-.20*
2nd RA	.11	-.01	.01	.07	.03	.03
Girls						
2nd PA	.14	-.18*	-.01	-.01	-.01	-.14
2nd RA	-.01	.07	.11	.02	.00	-.19*

Note. † $p < .10$. * $p \le .05$. ** $p < .01$. *** $p < .001$. ER = Emotional Reactivity. ED = Emotional Dissemblance. K = Kindergarten. PA = Physical Aggression. RA = Relational Aggression. Bolded correlations have significant gender differences using the Fisher's *r*-to-*z* transformation.

Table 4

Laboratory Coded Emotional Reactivity Interacting with Anger Minimization and Anger

Distress

	2nd Aggression (RA & PA)			
	Girls		Boys	
Predictor	β	ΔR^2	β	ΔR^2
Step 1				
Lab ER	-.08		.03	
Minimization	.04		.18	
Distress	-.03	.02	.01	.03
Step 2				
Lab ER × Minimize	.09		.09	
Lab ER × Distress	-.12		-.24†	
Minimize × Distress	.03	0.2	.05	.05
Step 3				
Lab ER × Min × Dis	-.07	.00	-.07	.00
Total R^2		.04		.08

† $p < .10$. * $p \leq .05$. ** $p < .01$. *** $p < .001$. Note. All predictors were measured during the kindergarten assessment. PA = physical aggression. RA = relational aggression. Aggression = averaged RA and PA scores. Lab ER = Emotional reactivity coded during a laboratory disappointment task. Min = Minimization of Anger-Parent Report. Dis = Distress reactions to anger-Parent Report.

Table 5

Laboratory Coded Emotional Dissemblance Interacting with Anger Minimization and

Anger Distress

	2nd Aggression (RA & PA)			
	Girls		Boys	
Predictor	β	ΔR^2	β	ΔR^2
Step 1				
Lab ER	-.25*	.01	-.07	.00
Step 2				
Lab ED	.29*		.08	
Minimization	-.00		.13	
Distress	-.03	.06†	.02	.02
Step 2				
Lab ED × Minimize	.14		-.01	
Lab ED × Distress	-.19†		-.03	
Minimize × Distress	.03	.04	.00	.00
Step 3				
Lab ED × Min × Dis	-.01		.06	.00
Total R^2		.11†		.02

† $p < .10$. * $p \leq .05$. ** $p < .01$. *** $p < .001$. Note. All predictors were measured during the kindergarten assessment. PA = physical aggression. RA = relational aggression. Aggression = averaged RA and PA scores. Lab ER = Emotional reactivity coded during a laboratory disappointment task. Lab ED = Emotional dissemblance coded during a laboratory disappointment task. Min = Minimization of Anger-Parent Report. Dis = Distress reactions to anger-Parent Report.

Table 6

Laboratory Coded Emotional Reactivity Interacting with Anger Minimization and Anger

Distress

| | 2nd Relational Aggression | | | | 2nd Physical Aggression | | | |
| | Girls | | Boys | | Girls | | Boys | |
Predictor	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2
Step 1								
RA or PA	.64***	.40***	.87***	.67***	.64***	.40***	.80***	.67***
Step 2								
Lab ER	.05		.03		-.10		-.02	
Minimization	.05		.01		-.02		.05	
Distress	-.04	.00	.02	.00	.02	.02	-.02	.00
Step 3								
Lab ER × Minimize	.18*		.04		-.12		-.01	
Lab ER × Distress	-.07		.20**		-.01		-.26***	
Minimize × Distress	.04	.03†	-.03	.03*	-.02	.01	.05	.05**
Step 4								
Lab ER × Min × Dis	-.05	.00	.04	.00	.00	.00	-.06	.00
Total R^2		.43***		.70***		.43***		.72***

† $p < .10$. * $p \leq .05$. ** $p < .01$. *** $p < .001$. Note. All predictors were measured during the kindergarten assessment except Step 1, which was measured in 2nd grade. RA = Relational Aggression. PA = Physical Aggression. Lab ER = Emotional reactivity coded during a laboratory disappointment task. Min = Minimization of Anger-Parent Report. Dis = Distress reactions to anger-Parent Report.

Table 7

Laboratory Coded Emotional Dissemblance Interacting with Anger Minimization and

Anger Distress

	2nd Relational Aggression				2nd Physical Aggression			
	Girls		Boys		Girls		Boys	
Predictor	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2
Step 1								
RA or PA	.63***		.84***		.61***		.83***	
Lab ER	.00	.40***	-.01	.69***	-.17†	.41***	-.01	.69***
Step 2								
Lab ED	.07		.04		.13		-.01	
Minimization	.01		.04		-.02		.00	
Distress	-.03	.00	.00	.00	.01	.01	.01	.00
Step 3								
Lab ED × Minimize	.18*		-.08		-.08		.07	
Lab ED × Distress	-.02		.11†		-.11		-.12†	
Minimize × Distress	.04	.03†	.01	.01	-.02	.03	-.01	.01
Step 4								
Lab ED × Min × Dis	-.00	.00	-.07	.00	-.00	.00	.08	.01
Total R^2		.43***		.70***		.45***		.71***

† *p* < .10. * *p* ≤ .05. ** *p* < .01. *** *p* < .001. Note. All predictors were measured during the kindergarten assessment except Step 1, which was measured in 2nd grade. RA = Relational Aggression. PA = Physical Aggression. Lab ER = Emotional reactivity coded during a laboratory disappointment task. Lab ED = Emotional dissemblance coded during a laboratory disappointment task. Min = Minimization of Anger-Parent Report. Dis = Distress reactions to anger-Parent Report.

98

Table 8

Laboratory Coded Emotional Reactivity Interacting with Anger Minimization and Anger

Distress

	2nd Peer Liking			
	Girls		Boys	
Predictor	β	ΔR^2	β	ΔR^2
Step 1				
Lab ER	-.06		-.33**	
Minimization	-.07		-.04	
Distress	-.04	.01	-.09	.08*
Step 2				
Lab ER × Minimize	-.18*		-.22*	
Lab ER × Distress	.01		.23*	
Minimize × Distress	-.12	.04	-.01	.08*
Step 3				
Lab ER × Min × Dis	.17†	.03†	.04	.00
Total R^2		.08		.16*

† $p < .10$. * $p \le .05$. ** $p < .01$. *** $p < .001$. Note. All predictors were measured during the kindergarten assessment. PA = physical aggression. RA = relational aggression. Aggression = averaged RA and PA scores. Lab ER = Emotional reactivity coded during a laboratory disappointment task. Min = Minimization of Anger-Parent Report. Dis = Distress reactions to anger-Parent Report.

Table 9

Laboratory Coded Emotional Dissemblance Interacting with Anger Minimization and

Anger Distress

	2nd Peer Liking			
	Girls		Boys	
Predictor	β	ΔR^2	β	ΔR^2
Step 1				
Lab ER	03	.00	-.35*	.07**
Step 2				
Lab ED	-.13		.06	
Minimization	-.02		.00	
Distress	-.08	.01	-.15	.02
Step 2				
Lab ED × Minimize	-.01		-.22†	
Lab ED × Distress	-.13		-.02	
Minimize × Distress	-.09	.02	.03	.06†
Step 3				
Lab ED × Min × Dis	.15	.02	.07	.00
Total R^2		.05		.15†

† $p < .10$. * $p \leq .05$. ** $p < .01$. *** $p < .001$. Note. All predictors were measured during the kindergarten assessment. Lab ER = Emotional reactivity coded during a laboratory disappointment task. Lab ED = Emotional dissemblance coded during a laboratory disappointment task. Min = Minimization of Anger-Parent Report. Dis = Distress reactions to anger-Parent Report.

Table 10

Mediated Moderation: Aggression Mediating the Relation between Kindergarten,

Laboratory Coded Emotional Reactivity × Anger Distress and 2nd Grade Peer Liking

	Outcome	Mediator	Outcome (mediator included as a predictor)
	Peer Liking	Aggression (RA & PA)	Peer Liking
Predictor	β	β	β
		Boys	
Step 1			
Lab ER	-.33**	.03	-.32**
Minimization	-.04	.18	.00
Distress	-.09	.01	-.09
Aggression (mediator)			-.25**
Step 2			
Lab ER × Minimize	-.22*	.09	-.20*
Lab ER × Distress	.23*	-.24†	.17†
Minimize × Distress	-.01	.05	.00
Step 3			
Lab ER × Min × Dis	.04	-.07	.02

† $p < .10$. * $p \le .05$. ** $p < .01$. *** $p < .001$. Note. All predictors were measured during the kindergarten assessment. RA = Relational Aggression. PA = Physical Aggression. Aggression = averaged RA and PA scores. Outcome measured during 2nd grade assessment. Lab ER = Emotional reactivity coded during a laboratory disappointment task. Min = Minimization of Anger-Parent Report. Dis = Distress reactions to anger-Parent Report.

Table 11

Laboratory Coded Emotional Reactivity Interacting with Anger Minimization and Anger

Distress

| | 2nd Peer Liking Partialling out PA in Step 1 | | | | 2nd Peer Liking Partialling out RA in Step 1 | | | |
| | Girls | | Boys | | Girls | | Boys | |
Predictor	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2
Step 1								
RA or PA	-.33***	.10***	-.26**	.10**	-.34***	.13***	-.21*	.06*
Step 2								
Lab ER	-.10		-.32**		-.07		-.32**	
Minimization	-.07		.00		-.06		-.01	
Distress	-.04	.02	-.09	.07*	-.05	.01	-.09	.07†
Step 3								
Lab ER × Minimize	-.19*		-.20*		-.13		-.20†	
Lab ER × Distress	-.02		.15		-.02		.21*	
Minimize × Distress	-.12	.05†	.01	.05	-.11	.03	-.01	.07*
Step 4								
Lab ER × Min × Dis	.15†	.02†	.02	.00	.15†	.02	.03	.00
Total R^2		.19**		.22**		.19**		.20**

† $p < .10$. * $p \le .05$. ** $p < .01$. *** $p < .001$. Note. All predictors were measured during the kindergarten assessment except Step 1, which was measured in 2nd grade. RA = Relational Aggression. PA = Physical Aggression. Lab ER = Emotional reactivity coded during a laboratory disappointment task. Min = Minimization of Anger-Parent Report. Dis = Distress reactions to anger-Parent Report.

Table 12

Laboratory Coded Emotional Dissemblance Interacting with Anger Minimization and

Anger Distress

| | 2nd Peer Liking Partialling out PA in Step 1 | | | | 2nd Peer Liking Partialling out RA in Step 1 | | | |
| | Girls | | Boys | | Girls | | Boys | |
Predictor	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2
Step 1								
RA or PA	-.37***		-.34***		-.39***		-.23*	
Lab ER	-.07	.11**	-.37**	.18***	-.04	.14***	-.36**	.12**
Step 2								
Lab ED	-.03		.08		-.04		.08	
Minimization	-.02		.04		-.02		.03	
Distress	-.09	.01	-.14	.02	-.10	.01	-.15	.02
Step 3								
Lab ED × Minimize	.01		-.21†		.07		-.23*	
Lab ED × Distress	-.20*		-.05		-.19*		-.01	
Minimize × Distress	-.09	.04	.03	.07†	-.07	.03	.03	.07†
Step 4								
Lab ED × Min × Dis	.14	.02	.11	.01	.14	.02	.08	.00
Total R^2		.18**		.28**		.20**		.21*

† $p < .10$. * $p \leq .05$. ** $p < .01$. *** $p < .001$. Note. All predictors were measured during the kindergarten assessment except Step 1, which was measured in 2nd grade. RA = Relational Aggression. PA = Physical Aggression. Lab ER = Emotional reactivity coded during a laboratory disappointment task. Lab ED = Emotional dissemblance coded during a laboratory disappointment task. Min = Minimization of Anger-Parent Report. Dis = Distress reactions to anger-Parent Report.

Table 13

Mediated Moderation: Relational Aggression Mediating the Relation between

Kindergarten, Laboratory Coded Emotional Reactivity × Anger Minimization and 2nd

Grade Peer Liking

Predictor	Outcome Peer Liking β	Mediator Relational Aggression β	Outcome (mediator included as a predictor) Peer Liking β
		Girls	
Step 1			
Physical Aggression	-.33***	.64***	-.19†
Step 2			
Lab ER	-.10	.05	-.09
Minimization	-.07	.05	-.06
Distress	-.04	-.04	-.04
RA (mediator)			-.22*
Step 3			
Lab ER × Minimize	-.19*	.18*	-.15†
Lab ER × Distress	-.02	-.07	-.02
Minimize × Distress	-.12	.04	-.11
Step 4			
Lab ER × Min × Dis	-.15†	-.05	.15†

† $p < .10$. * $p \leq .05$. ** $p < .01$. *** $p < .001$. Note. All predictors were measured during the kindergarten assessment except Step 1 and the mediator in Step 2, which were measured in 2nd grade. RA = Relational Aggression. Lab ER = Emotional reactivity coded during a laboratory disappointment task. Min = Minimization of Anger-Parent Report. Dis = Distress reactions to anger-Parent Report.

Table 14

Mediated Moderation: Physical Aggression Mediating the Relation between

Kindergarten, Laboratory Coded Emotional Reactivity × Anger Distress and 2nd Grade

Peer Liking

Predictor	Outcome Peer Liking β	Mediator Physical Aggression β	Outcome (mediator included as a predictor) Peer Liking β
		Boys	
Step 1			
Relational Aggression	-.21*	.80***	-.01
Step 2			
Lab ER	-.32**	-.02	-.32**
Minimization	-.01	.05	.00
Distress	-.09	-.02	-.09
PA (mediator)			-.25
Step 3			
Lab ER × Minimize	-.20†	-.01	-.21*
Lab ER × Distress	.21*	-.26***	.15
Minimize × Distress	-.01	.05	.01
Step 4			
Lab ER × Min × Dis	.03	-.06	.02

† $p < .10$. * $p \leq .05$. ** $p < .01$. *** $p < .001$. Note. All predictors were measured during the kindergarten assessment except Step 1 and the mediator in Step 2, which were measured in 2nd grade. Lab ER = Emotional reactivity coded during a laboratory disappointment task. Min = Minimization of Anger-Parent Report. Dis = Distress reactions to anger-Parent Report.

Figure 1. Predicted Mediated Moderation Pathways for Girls and Boys.

Boys

Emotional Reactivity × Distress	→	Physical Aggression	→	Low Peer Liking

Girls

Emotional Reactivity × Minimization	→	Relational Aggression	→	Low Peer Liking

Figure 2. Boys' Interaction between Kindergarten Laboratory Coded Emotional

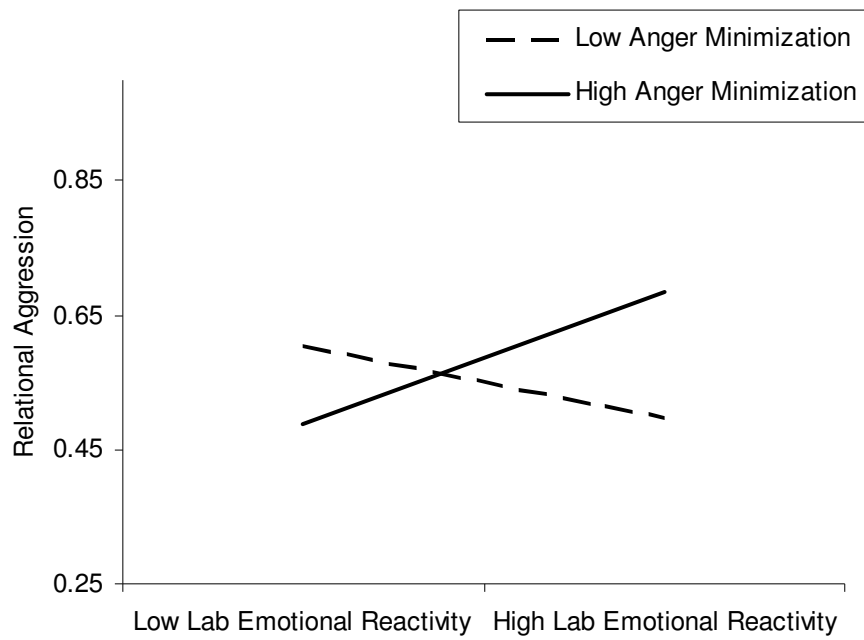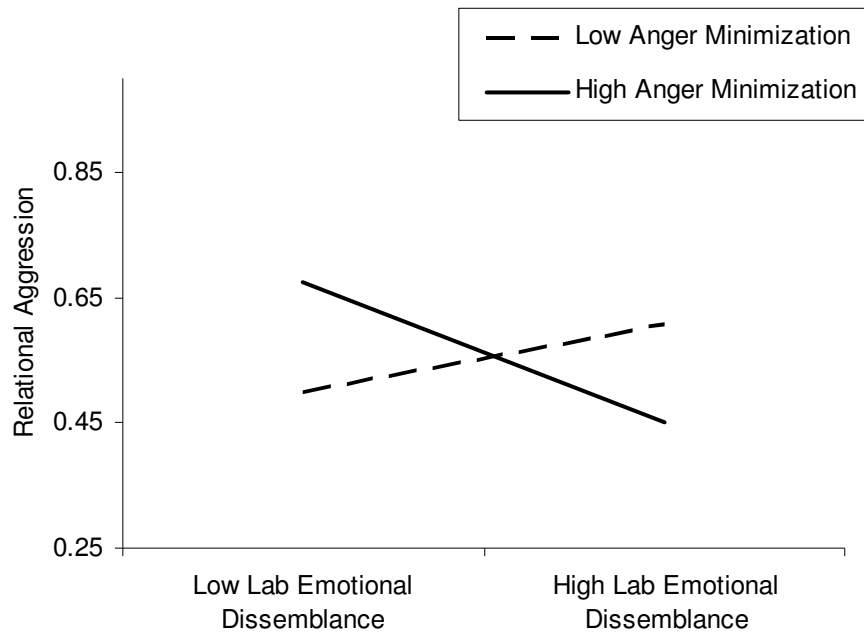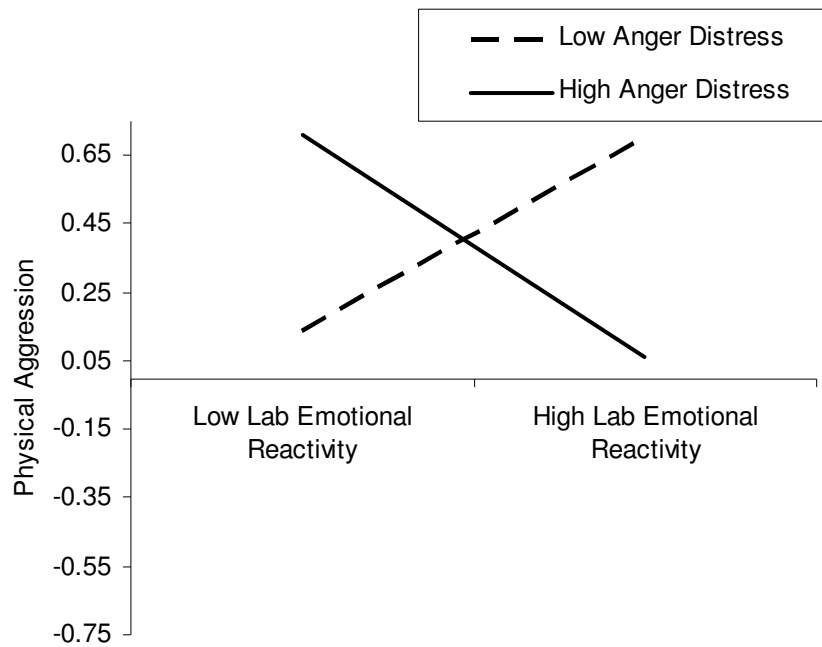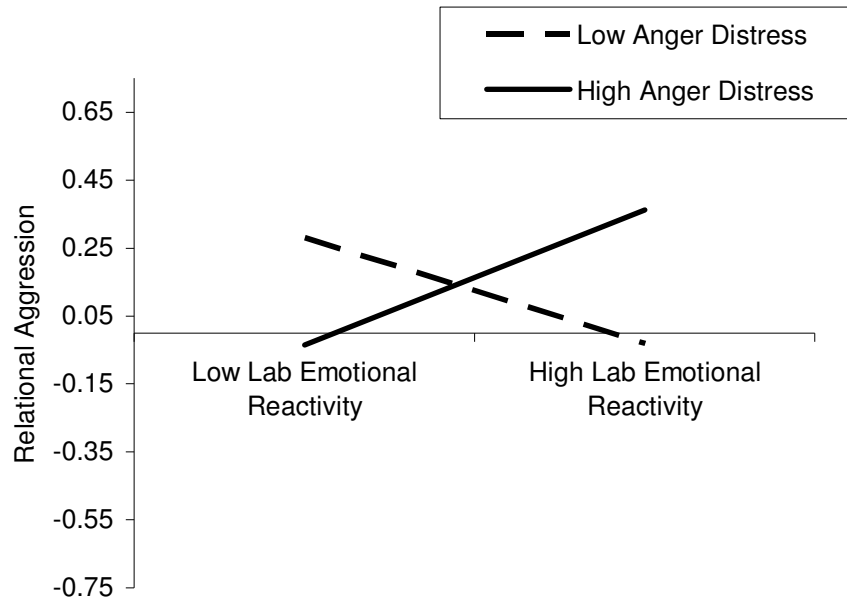Reactivity and Maternal Distress Reactions to Anger Predicting 2nd Grade Aggression
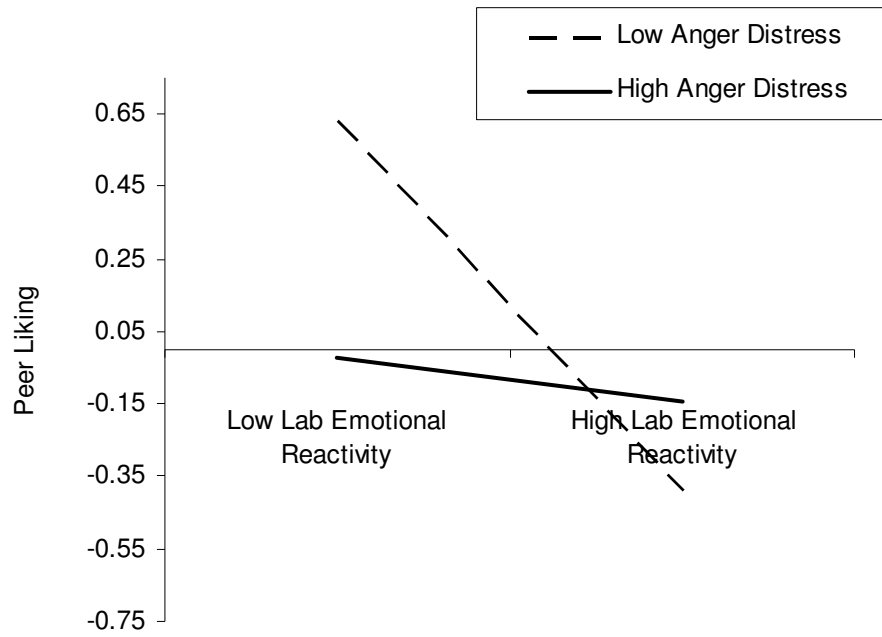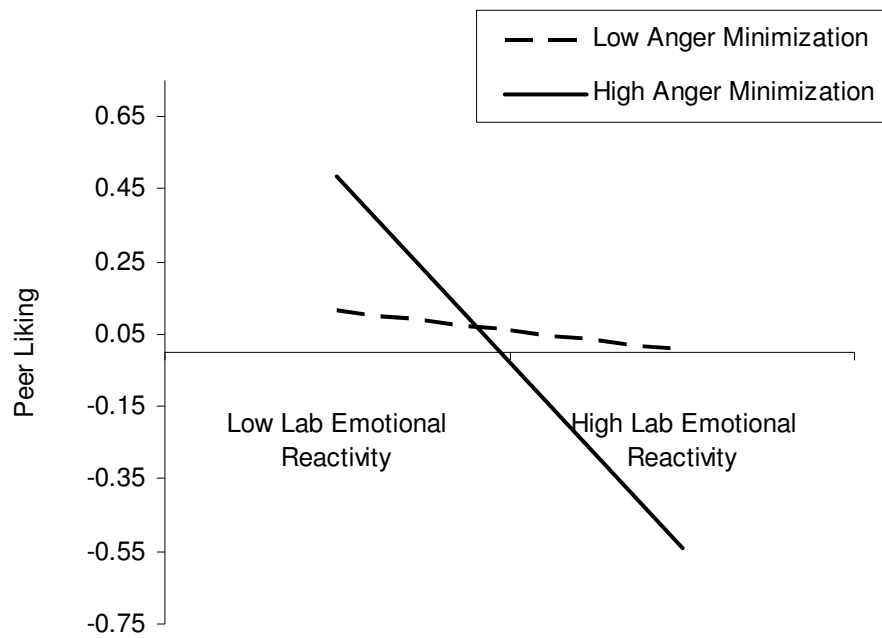
(Relational and Physical Aggression Combined).

Figure 3. Girls' Interaction between Kindergarten Laboratory Coded Emotional

Reactivity and Maternal Minimization Reactions to Anger Predicting 2nd Grade

Relational Aggression.

Figure 4. Girls' Interaction between Kindergarten Laboratory Coded Emotional

Dissemblance and Maternal Minimization Reactions to Anger Predicting 2nd Grade

Relational Aggression.

Figure 5. Boys' Interaction between Kindergarten Laboratory Coded Emotional

Reactivity and Maternal Distress Reactions to Anger Predicting 2nd Grade Physical

Aggression.

Figure 6. Boys' Interaction between Kindergarten Laboratory Coded Emotional
Reactivity and Maternal Distress Reactions to Anger Predicting 2nd Grade Relational
Aggression.

Figure 7. Boys' Interaction between Kindergarten Laboratory Coded Emotional

Reactivity and Maternal Distress Reactions to Anger Predicting 2nd Grade Peer Liking.

Figure 8. Boys' Interaction between Kindergarten Laboratory Coded Emotional

Reactivity and Maternal Minimization Reactions to Anger Predicting 2nd Grade Peer
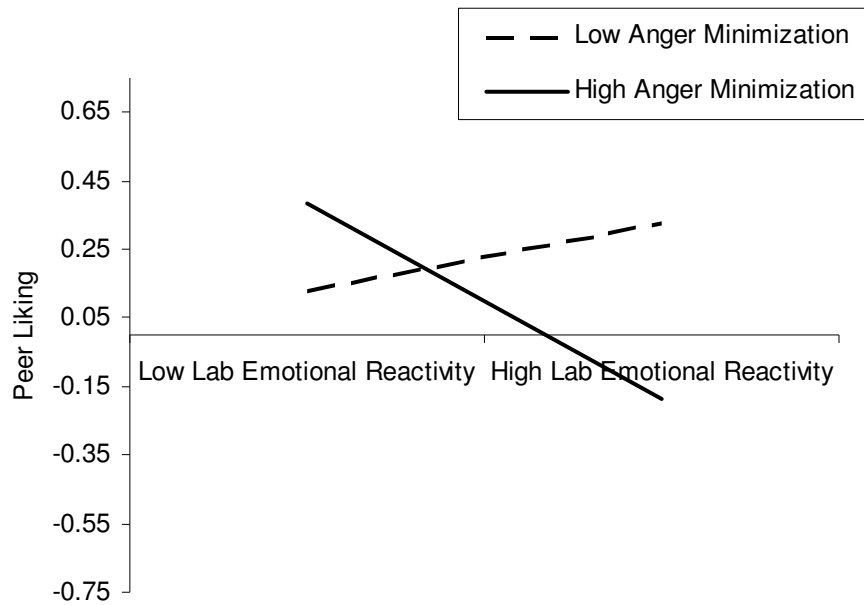
Liking.

Figure 9. Girls' Interaction between Kindergarten Laboratory Coded Emotional

Reactivity and Maternal Minimization Reactions to Anger Predicting 2nd Grade Peer

Liking.

Figure 10. Girls' Interaction between Kindergarten Laboratory Coded Emotional Dissemblance and Maternal Distress Reactions to Anger Predicting 2nd Grade Peer Liking.
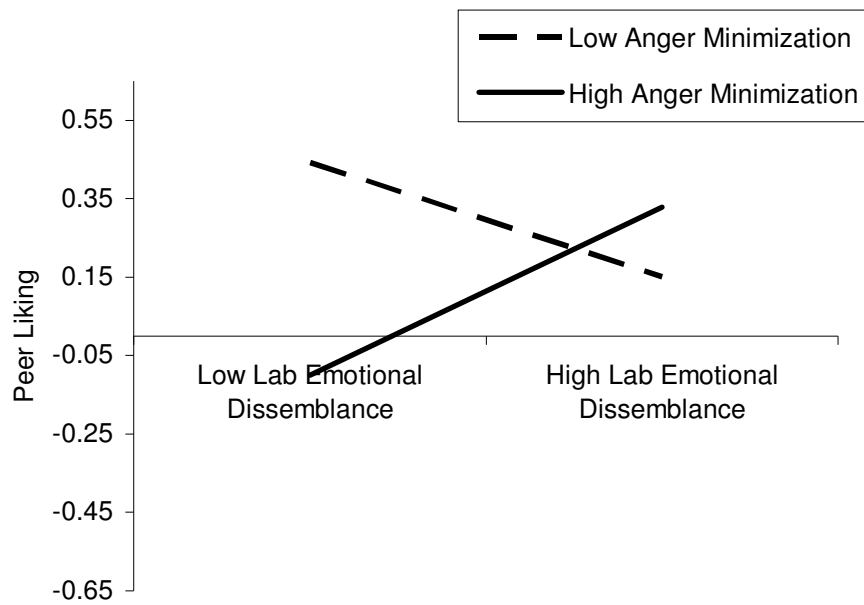
Figure 11. Boys' Interaction between Kindergarten Laboratory Coded Emotional

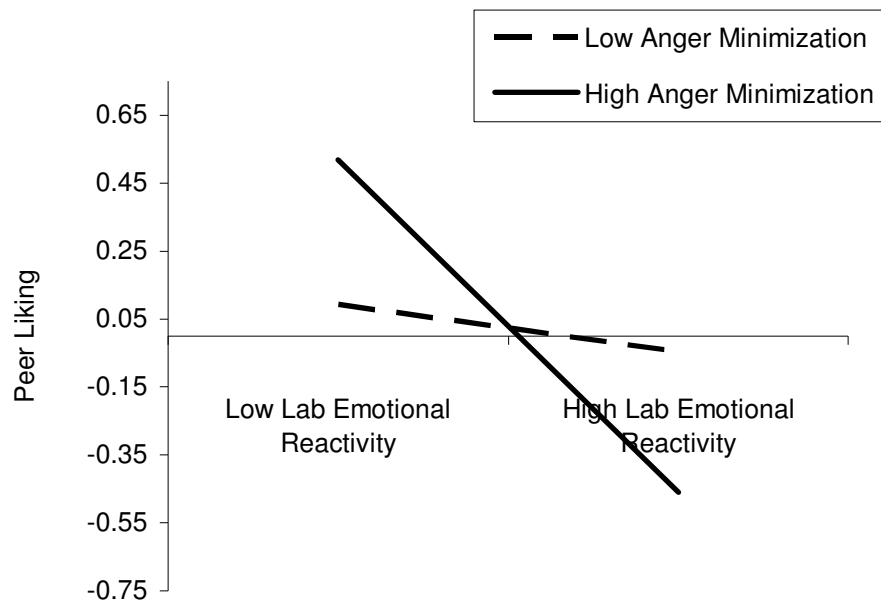Reactivity and Maternal Minimization Reactions to Anger Predicting 2nd Grade Peer

Liking.

Figure 12. Boys' Interaction between Kindergarten Laboratory Coded Emotional

Dissemblance and Maternal Minimization Reactions to Anger Predicting 2nd Grade Peer
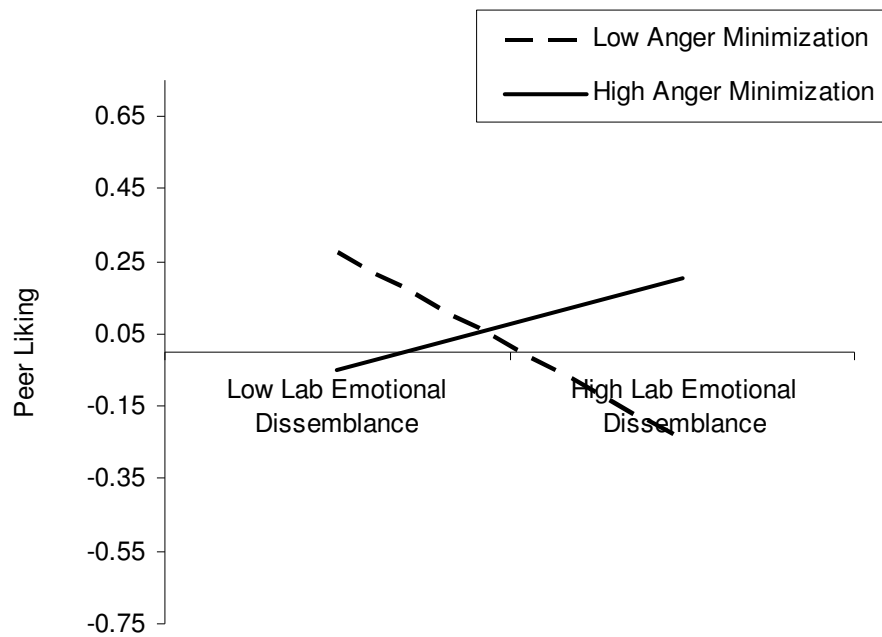
Liking.

Figure 13. Boys' Interaction between Kindergarten Laboratory Coded Emotional

Reactivity and Maternal Distress Reactions to Anger Predicting 2nd Grade Peer Liking.