

ABSTRACT

Title of Document: THE ASSESSMENT OF THE FORMS AND
FUNCTIONS OF CHILDHOOD
AGGRESSION RECONSIDERED

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This study examined the relationships between aggression and adjustment with a configuration of aggression categories derived from factor analyses of two commonly used scales to measure aggression, Dodge and Coie's (1987) Reactive/Proactive scale and Crick and Grotpeter's (1995) Children's Social Behavior Scale (relational and overt aggression). Second and third grade students and their teachers completed aggression ratings and a battery of adjustment measures. Teacher and peer rated aggression scales were constructed from an exploratory factor analysis of the aggression items. The teacher rated scales that emerged were pure overt, reactive relational, and reactive overt, and emerging peer rated scales were pure overt and reactive relational. The factor analysis of the teacher ratings revealed numerous cross-loaded as did the analysis of peer ratings. Cross-loaded teacher-rated items captured the construct of emotional dysregulation whereas the cross-loaded peer-rated items represented pure relational aggression. Unique associations were observed between

teacher-rated pure overt aggression with externalizing behaviors, peer rated reactive relational aggression with self-rated depression and anxiety symptoms, and peer rated pure overt aggression with self-rated depression symptoms. The results regarding overall gender differences were consistent with prior research in that boys were perceived as more purely overtly aggressive than girls when rated by both their teachers and peers, and girls were perceived as more reactively relationally aggressive than boys when rated by both teachers and peers. Gender was also found to moderate certain relationships between aggression and adjustment. Importance of informant, as well as implications for understanding the construct of aggression and its relationship to adjustment are discussed.

THE ASSESSMENT OF THE FORMS AND FUNCTIONS OF CHILDHOOD
AGGRESSIVE BEHAVIOR RECONSIDERED

By

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Chapter 1: Introduction

Decades of research have focused on the study of aggressive behavior. Studies indicate that childhood aggression is associated with several concomitant problems, such as peer rejection, depression, and hyperactivity. In addition, longitudinal studies have demonstrated that aggressive behaviors in childhood are good predictors of later adjustment problems, such as externalizing problems (e.g., delinquency), internalizing problems (e.g., depression), victimization, and poor school achievement (for a review, see Coie & Dodge, 1998; Newcomb, Bukowski, & Pattee, 1993).

Theories of aggressive behavior suggest different aggressive behaviors can be distinguished by their origin and function. According to Dodge and Coie (1987), reactive aggression is a hostile response to a provocation or a perceived threat and usually occurs with negative affect and expression, and proactive aggression is a non-provoked, purposeful act, aimed at harming others, albeit by intimidation or by obtaining a goal. Reactive aggression's origin lies in frustration-aggression models (Berkowitz, 1993) and proactive aggression stems from social learning theories where behavior is controlled by reinforcements (Bandura, 1973). However, substantial positive correlations have been found between the two functions of aggression (i.e., Card & Little, 2006). This strong relationship has caused some to question the utility of this dichotomous approach (Bushman & Anderson, 2001), as others maintain the distinction is important for understanding the etiology of aggressive behavior and can inform effective intervention (i.e., Little, Jones, Henrich, & Hawley, 2003). While many have found support for a two-factor model through methods such as

confirmatory factor analysis (e.g., Poulin & Boivin, 2000), others have failed to replicate such findings (e.g., Roach & Gross, 2003).

A majority of the studies of aggression have concentrated on physical, direct, overt instances of aggressive behavior. More recently, additional forms of aggression have been identified in the literature, including relational, social, verbal, and indirect. Crick and Grotpeter (1995) defined relational aggression as behaviors that damage relationships, or threat of relationship damage, as a means to harm to another. Such relational aggressive behaviors may include both direct and indirect actions such as spreading false rumors to get others to reject a peer and threatening to end a friendship if a friend does not comply with a request. Relational aggression appears to be more common among girls than boys, as well as more normative for girls (for a review, see Crick et al, 1999). Similar to reactive and proactive aggression, relational aggression and overt aggression are strongly related (e.g., Crick, 1997), although, a majority of aggressive children display one form over another (Rys & Bear, 1997).

Recently, attempts have been made to measure the utility of the reactive and proactive function types of aggression by taking into account both the form (relational or overt) and the function (reactive or proactive) of aggression (Little et al., 2003). This new integrative approach highlights the importance of knowing in what context the aggressive behavior is displayed. The two functions of aggression describe two different social-cognitive experiences. Reactive aggression is a response to a real or perceived threat that is related to emotional dysregulation and is viewed by others as hostile, while proactive aggression is a socially planned action in order to get what one wants.

The purpose of the current study is to re-examine relationships between aggression and adjustment with a configuration of aggression categories derived from factor analysis of two commonly used scales to measure aggression, Dodge and Coie's (1987) Reactive/Proactive scale and Crick and Grotpeter's (1995) Children's Social Behavior Scale (assesses relational and overt aggression). One of the aims of the factor analysis is to see if the items are in line with their original designations, or if the results suggest an integrative approach would be more appropriate. Teacher and peer reports of aggression indicate that a three-factor model best describes the data and the items clustered into dimensions based on the forms and function of aggressive behavior.

The forms and functions of aggression are differentially related to social-psychological adjustment issues. Commonly, form and function are studied separately when interested in the relation between aggression and adjustment. Only recently have investigators begun to use an integrative approach of assessing both form and function to determine how the different types of aggression are associated and predict adjustment problems. For instance, both reactive and relational aggressive behaviors have been shown to be associated with peer rejection (i.e., Card & Little, 2006; Ostrov & Crick, 2007), while proactive aggression is not. It is unknown how assessing aggression using an integrated measurement framework by accounting for both form and function will impact these relationships. It is hoped that by examining the unique nature between the different types of aggression the connections between adjustment and aggressive behavior will be refined.

Chapter 2: Literature Review

The Construct of Aggression

Over the years, psychologists have defined aggression in various ways. Most contemporary views of aggression are multidimensional and differentiate between the forms of aggression (i.e., physical, verbal, relational) and the functions of aggression (i.e., reactive, instrumental, proactive). While many have pointed out that there is considerable overlap between both forms and functions of aggression (e.g., Little, Jones, Henrich, & Hawley, 2003), there is evidence of some notable distinction between them. Below is a review of these overlaps and differences and also a suggested alternative approach to accurately measuring the many facets of the construct of aggression.

Reactive and Proactive Aggression

The study of aggression in humans has spanned several decades. Several definitions have been offered that would best describe aggressive behavior and a widely accepted definition states aggression is a behavior deliberately aimed at harming people and/or objects. More specifically, the perpetrator believes their action will cause harm, and the target of the behavior wants to avoid this harm (Bushman & Anderson, 2001). Within this definition, there is room for variability as to what constitutes the form this harm will take, albeit physical, psychological, or relational. Researchers have pointed out meaningful differences among these specific forms of behaviors. For example, Dodge and Coie (1987) proposed a distinction

between reactive and proactive aggression. According to Dodge and Coie, reactive aggression is a behavior that is a hostile reaction to a perceived threat and typically includes negative affect, while proactive aggression is a calculated, aversive behavior aimed at influencing others that could be an attempt to obtain an object or to intimidate. Not only do these different types of aggression describe different behavior, they are also linked to distinct patterns of associated behaviors, ranging from social-cognitive patterns to social adjustment variables to peer relations (Roach & Gross, 2003).

Dodge and Coie (1987) created a teacher rating scale consisting of two 3-item scales to assess reactive and proactive aggression of children in grades three through six. Results from their study show that teachers were able to distinguish between reactive and proactive aggressive behaviors in children. Since then, many studies have validated the distinction between reactive and proactive aggression as two distinctive types of aggressive behavior. Day, Bream, and Pal (1992) also found support for a two-factor model of the teacher rating scale using a sample of male children, as did Poulin and Boivin (2000) when they used confirmatory factor analysis to show a two-factor model was a better fit for the rating scale than a one-factor model in a sample of fourth, fifth, and sixth grade boys. Two key limitations pervade these previous studies. One, with the exception of Dodge and Coie (1987), the samples only consisted of boys. Although girls have been found to participate in more relational forms of aggression compared to boys, they still engage in overt forms of aggression and should be included in studies (Crick, 1997). Second, with the exception of Day, Bream, and Pal (1992), there is a high correlation between the

reactive and proactive scales. Dodge and Coie (1987) report a correlation between the reactive and proactive scales of 0.76 and Poulin and Boivin (2000) report a correlation of 0.73.

In response to the high inter-correlation among reactive and proactive aggression, some have begun to question whether reactive and proactive aggression can be assessed as two different constructs or even if the distinction between the two has utility (Buschman & Anderson, 2001). Some studies have grouped participants into reactive-only, proactive-only groups, and combined-type groups (i.e., Fite, Colder, & Pelham, 2001). The results from these studies indicate that co-occurring reactive and proactive aggression is more common than each type alone and suggest that a combined reactive/proactive group may display different patterns of behavior that are unique from one type alone (Dodge, Lochman, Harnish, Bates, & Pettit, 1997). Fite, Colder, and Pelham Jr. (2006) tested a three-factor model of reactive, proactive, and combined-type aggression using confirmatory analysis. The parents of 100 children (69 boys), ages ranged from 9 to 12 years old, completed Dodge and Coie's (1987) reactive/proactive scale to which two additional items were added to bring the total of items to eight. The results indicated that the two-factor and the three-factor model both provided a good fit to the data. Despite the usual desire for parsimony, the authors kept a three-factor model in order to distinguish between pure and co-occurring dimensions of reactive and proactive aggression. All of the items in Fite et al's study, except one, cross loaded on both the reactive and the proactive factor, and thus were included on the co-occurring factor. This method does not seem to tease apart the two type of aggression, rather, it seems to add to the problem of the

high correlation between the two types. The authors stress that replication of their results is needed, especially due to their single informant approach. It will be important to gather data from teachers and peers, as these informants interact with children in different contexts than their parents. It is the purpose of the current study to add to the literature by testing a three-factor approach with more than one informant and looking at the three factors in relation to social-psychological adjustment.

Not all investigators, however, have found the reactive and proactive distinction in their data. In a sample of 122 children (68 females) in third and fourth grade, Roach and Gross (2003) asked teachers to rate the children on reactive and proactive aggression with Dodge and Coie's (1987) teacher rating scale. The time of year the data were collected is unknown. A principal component analysis revealed only one factor, where all of the items previously identified as reactive or proactive, could be extracted. When a two-factor solution was forced, unclear results were observed, contrary to previous findings (i.e., Poulin & Boivin, 2000). Roach and Gross suggest that teachers may have been using a single dimension to categorize aggressive behavior and may not have been privy to witnessing the function of the aggressive behavior and therefore could not make the distinction between reactive and proactive aggression. Another possibility could be that the children in this study exhibited both reactive and proactive aggressive behavior, supported by the high correlation between the reactive and proactive scales. As Roach and Gross also point out, prior work with the reactive/proactive scales was conducted on samples of males only. The inclusion of females in their study and their differing results is an

important step towards understanding the gender distribution of reactive and proactive aggression and supports what other researchers (i.e., Crick, 1997) have said about the need to explore female aggression and what form and function it takes.

Recently, a meta-analysis of the distinction between reactive and proactive aggression was conducted to investigate the inconsistent findings concerning the relation between the two functions of aggressive behavior (Polman, Orobio de Castro, Koops, van Boxtel, & Merk, 2007). Taking both participant and methodological characteristics into account, Polman et al. found a significant correlation between reactive and proactive aggression, however, method of measurement was the only variable to explain variance in effect sizes. Other study characteristics such as age, informant, and gender did not explain a significant portion of the variance in aggression scores. Observational studies were associated with smaller correlations than questionnaires, while questionnaires that differentiate between form and function of aggression found lower correlations than those questionnaires that did not. Interestingly, higher reliability of the aggression measures was associated with a higher correlation between reactive and proactive aggression.

Relational and Overt Aggression

As researchers continued to investigate the construct of aggression, they began to ask questions about nonphysical forms of aggression, such as verbal aggression, facial expressions, or manipulating social situations that cause harm to others (Archer, 2001; Underwood et al, 2001; Bjorkqvist, Lagerspetz, & Kaukianen, 1992). Crick and Grotpeter (1995) suggested a relational form of aggression in which

the behaviors attempt to exert control over another child by threatening or damaging their relationships with others, and may include acts such as threatening a friendship unless a peer complies with a request, spreading false rumors to encourage others to reject a classmate, or using exclusion from a group. Archer (2001) suggested that relational aggression could be either direct or indirect, the former consisting of observable and confrontative behaviors and the latter of a covert nature. The literature on relational aggression still lacks agreement on the most appropriate term to describe these types of behaviors. Social aggression (Underwood et al., 2001), indirect aggression (Bjorkqvist, 2001), and relational aggression (Crick & Grotpeter, 1995) are the more common terms found and all of the authors assert that a common term would benefit the body of research. Merrell, Buchman, and Tran (2006) suggest that relational aggression is the most appropriate term because social aggression is too broad and the research using that term includes physical and nonphysical behaviors, as well as research on animal behaviors. They also suggest that indirect aggression is too narrow, as it does not leave room for all potentially relationship damaging behaviors, such as direct name-calling.

Several methods exist for assessing children's aggression in general.

Relational aggression is more difficult to assess than physical aggression because it can be covert, such as spreading rumors, whereas physical aggression is more direct, such as hitting, kicking, or threatening to perform these behaviors (Merrell et al., 2006). Sociometric assessments are frequently used in assessing relational aggression to obtain information regarding social status, popularity, and behaviors directly from the peer group and include peer nomination, peer rating, and peer ranking.

Sociometric techniques provide multiple assessments from all classmates rather than from a teacher or parent and this can result in additional reliability of the ratings. Crick and Grotpeter (1995) developed and studied a peer nomination measure to assess relational and physical aggression, their distinction from one another, as well as gender differences between the two types of aggression. In the first study, Crick and Grotpeter (1995) asked 491 children, third through sixth grade, to nominate up to three classmates in response to items describing various relational and physical aggressive behaviors. Approximately 60% of the sample was Caucasian, 37% were African American, and 3% were from other racial/ethnic groups. Principal components factor analysis on the nominations the children received revealed two separate factors and each scale was highly reliable. They also found that girls were nominated more often for participating in the relational items and boys were nominated more often for the physical items. Crick (1996) investigated a teacher rating measure of relational and physical aggression and compared teacher ratings to peer nominations of aggression. Teacher and peer ratings of relational aggression were moderately correlated ($r = .57$ for boys; $r = .63$ for girls) and for physical aggression were slightly more correlated ($r = .69$ for boys; $r = .74$ for girls). The observed correspondence between teachers and peers in Crick's (1996) investigation is quite higher than other investigations had found in the past regarding aggressive behavior (e.g., Achenbach, McConaughy, & Howell, 1987; Coie & Dodge, 1988).

Some of the limitations of sociometric techniques are gender-role stereotypes and/or the impact of a child's reputation influencing others' views (McNeilly-Choque et al., 1996) as well as difficulty obtaining informed consent for all children in the

social network (Merrell et al., 2006). Teacher ratings too, have limitations. They may over-identify children or they may rate children based on biases or stereotypes they hold about them. Teachers may also not be privy to the inner-workings of a child's peer group and may not be aware of covert behaviors. Most researchers are in agreement that a multi-method, multi-informant approach to assessing most social behaviors is preferred and contributes to the validity of assessments (McEvoy et al., 2003) and aggression is no exception.

A number of studies have found that relational aggression is more common in girls than boys (e.g., Crick & Grotpeter, 1995; Rys & Bear, 1997; Zimmer-Gembeck, Geiger, & Crick, 2005). This gender difference appears to span children's development, from preschool through adolescence. Overall, these studies have found that girls view relational and physical aggression as equally harmful, then tend to direct relational aggression towards other girls, and per incident of relational aggression, girls are more aggressive than boys (Merrell et al., 2006). However, there are some studies that have found greater relational aggression among boys than girls (Hennington, Hughes, Cavell, & Thompson, 1998). Goldstein, Tisak, and Boxer (2002) found that preschool children perceived boys to be more relationally aggressive than girls and Hennington et al. (1998) found second and third grade boys exhibit higher rates of relational and physical aggression as rated by their peers.

In another example, McEvoy et al. (2003) used three distinct assessments of relational and physical aggression, peer ratings, teacher rating, and direct observations and found in a sample of fifty-nine, mostly Caucasian children (25 girls) that all three reporters rated girls more relationally aggressive than physically

aggressive, and boys as more physically aggressive than relationally aggressive. However, boys were found to be more physically and relationally aggressive than girls. The authors suggest that their results differ from previous studies because most of the children did not engage in either form of aggression, so their data set was positively skewed and statistical analyses that do not assume a normal distribution may be needed. Several studies have found similar distribution patterns for all three rating methods: peer ratings and teacher ratings (e.g., Crick et al., 1997; Lagerspetz et al., 1998), and direct observation (McNeilly-Choque et al., 1996).

There are then studies that fail to find gender differences between relational and physical aggression (Crick, Bigbee, & Howes, 1996; Tomada & Schneider, 1997). Tomada and Schneider (1997) did not find a distinction between relational and physical aggression in their Italian sample of 314 school children, 8-10 years of age and suggest cultural differences between the United States and Italy may have played a role in their findings. After examining third through sixth grade students, Crick, Bigbee, and Howes (1996) found that boys and girls both rated relational aggression to be a normative behavior.

In an effort to provide a comprehensive summary of sex differences in aggressive behavior, Archer (2004) conducted a meta-analysis of real-world setting experiments. He compared sex differences in types of aggression (physical, verbal, and indirect) measured through self-reports, peer reports, teacher reports, and observations for children ranging in age from early childhood to young adulthood. Archer found the highest sex differences for physical aggression, showing that males were more likely than females to engage in physically aggressive acts. Sex

differences for indirect aggression were not as high as previously reported by some studies (e.g., Crick & Grotpeter, 1995) and Archer cites method of measurement as a possible explanation. Studies that used self-report and peer nominations (the child naming a specific number of other children who engage in a specific behavior) displayed no sex difference, while peer ratings (the child assesses all of the other children on a scale stating the frequency of the aggressive acts) and teacher ratings showed a small difference for females. It appears that further research is needed in order to sort out gender differences among the different types of aggressive behavior and that measurement method is one avenue that requires further refinement.

Form and Function of Aggression

More recent views about aggression have focused on a multidimensional approach of categorizing types of aggression. One view emerging is to distinguish between the forms and functions of aggression. The forms of aggression are the “whats” and include direct, indirect, and relational aggression while the functions are the “whys”, such as reactive and proactive aggression (Little et al., 2003). Reactive aggression is viewed to be a response to a provocation that is related to poor emotional regulation and perceived by peers to be unhelpful and mean, whereas proactive aggressive behaviors are self-serving, planned acts aimed at social control. Popular aggression measures (i.e., Dodge & Coie, 1987) include questions that ask about both form and function within the same item and as a result, many investigations utilizing these questions report high inter-correlations between reactive and proactive aggression. In order to differentiate between the forms and functions of

aggression, Little et al (2003) designed a self-report measure that measures six subscales of aggression; pure overt, pure relational, overt reactive, overt proactive, relational reactive and relational proactive. The authors maintain that within their multidimensional model, the reactive and proactive functions would be uncorrelated and that all types of aggression would have unique predictive patterns of selected outcome measures, such as frustration intolerance, victimization, and social competence. This study took place in Germany and had a sample size of 1723 students (910 female), grades 5 through 10, with 82% German ethnicity, 8% Turkish, and 6% other.

The self-report aggression measure was comprised of six subscales and these items were adapted from previously published scales (i.e., Crick & Grotpeter, 1995; Dodge & Coie, 1987). Using structural equation modeling techniques, the results indicated that the six-factor model showed the best fit, as well as a negative correlation between reactive and proactive aggression ($r = -.10$). Thus, it appears as though the commonly found correlation between reactive and proactive aggression in previous investigations may be the result of a measurement artifact due to the physical nature of the aggression being measured. Little et al (2003) were able to partial out the variance associated with the pure form of physical and relational aggression and then could measure the functions of the aggressive behavior without any confounds. It is difficult to directly compare the results of Little et al's (2003) study with previous work because their measure was a self-report rating scale, and an overwhelming majority of past studies utilized teacher and/or peer ratings of aggression. Perhaps by asking the children directly about their behaviors, it revealed

a more specific picture of how and why a child behaves in a certain way, rather than asking an outsider.

To support criterion validity of their new measure, Little et al (2003) selected common correlates in the aggression literature to relate to their six aggression scales and hypothesized that differential patterns would emerge with regard to type of aggression. The measures included were, hostility, frustration intolerance, antisocial behavior, social competence, and victimization. Peers, as well as self-reports were used in most measures, except to measure antisocial behavior only peer reports were used and to measure social competence only self-reports were used. Expectedly, pure overt and relational aggression and both reactive functions were associated with hostility, but instrumental was not. For frustration intolerance, the effect for reactive functions of aggression were significantly greater than those of pure overt and pure relational. Proactive function of aggression had a negative relation with frustration intolerance, suggesting that proactive aggression is an emotionally regulated type of aggression. Antisocial behavior was associated with overt and reactive functions of aggression, but was not associated with relational or proactive functions. For all variables, the differential patterns of relationships were consistent although the relationships for self-reports were stronger than peer-reports.

One of the limitations of the Little et al (2003) study is that the sample consisted of older children than usually studied and the investigation took place in Germany where there could be cultural differences in how children behave. Despite these limitations, the model proposed by Little et al. (2003) does appear to disentangle some of the overlap reported between reactive and proactive aggression.

Researchers are beginning to use Little et al's (2003) model to test its utility in other samples. Ostrov and Crick (2007) tested the dimensional approach of aggression using an observational classification system on preschoolers. They hypothesized that girls would display more relational aggression than boys and boys would display more physical aggression compared to their girl peers. They also predicted that the proactive function of aggression would be observed more frequently than the reactive function. Finally, they believed that for all dimensions of aggression, stability would be observed over time, similar to past investigations (Crick, Ostrov, & Werner, 2006).

Using a sample of 132 children (69 girls), ranging in age from 30 to 48 months, the authors measured aggressive behavior through an observational system at two different points in time, separated by 4-5 months. Definitions of relational and physical aggression were detailed and trained observers and coders recorded the behaviors of the target children. The observations were then coded a second time for reactive and proactive functions. Reactive aggression was defined as a threat or perceived threat based on the presence of victimization behaviors or as a hostile interaction. Proactive aggression was defined as making a reference to needing a toy, object, or social position but was not in response to a threat or in response to being victimized. Teachers also were asked to report relational and physical aggression and reactive and proactive aggression. They responded to items based on an adolescent self-report measure for the functions and a previously used teacher measure for aggression forms. Social adjustment was measured through teacher reports and only looked at peer rejection and student-teacher relationships because previous literature

has suggested that these two social variables are associated with relational aggression (Crick & Zahn-Waxler, 2003).

The results indicate that teachers and observers agreed when rating proactive and reactive aggression when describing physical aggression, but they did not agree when describing relational aggression. When the analyses were conducted by gender, teacher reports and observed measures were associated with proactive relational aggression for girls, but not for boys. Perhaps because relational aggression is seen more often in girls, teachers and observers were more likely to report this behavior, or it they could be reporting a stereotype. Consistent with previous research regarding the observation of reactive and proactive aggression, there was little correlation between the observed reactive and proactive scales (Price & Dodge, 1989; Schwartz et al., 1998).

Taken together, the results of the studies reviewed suggest that reactive and proactive aggression are distinct constructs that describe different functions of aggressive behaviors and overt and relational are forms of aggression exhibited by children. These different forms and functions are important to identify in children because each has been associated with distinct patterns of social-psychological adjustment. These differential relationships will be reviewed and discussed, highlighting the need to explore how a six factor model of teacher and peer reports are related to adjustment.

Aggression and Social Adjustment

Childhood aggression is consistently associated with both concurrent and future maladjustment, ranging from poor peer relations, depression, academic problems, and delinquency in childhood and even antisocial and criminal behavior in adulthood (Coie & Dodge, 1998). Since the 1970's, correlational evidence has supported the conclusion that disruptive behaviors (i.e., aggression) are associated with peer rejection, while prosocial behaviors are associated with peer acceptance (Ladd, 1999). More recent investigations have shown that the form and function of aggression are differentially associated with peer relations (Card & Little, 2006; Crick, Ostrov, & Werner, 2006). Furthermore, there are established links between peer relations, internalizing and externalizing problems (Little & Garber, 1995; Nolan, Flynn, & Garber, 2003). There are several theoretical models cited in the literature that seek to explain how and why aggression, peer relations, and internalizing problems are related.

Peer Relations

Peer relations are an important feature of one's developmental context and have generated a large amount of research, especially dedicated to the relationship between sociometric status and concurrent social behaviors (Cillessen & Mayeux, 2004). Sociometric status refers to the measurement technique employed by investigators to determine a child's experience with their peers. Based on a review of the available literature at the time, Coie, Dodge, and Kupersmidt (1990), reported certain patterns of behavior that were associated with sociometric status. Popular children are helpful and socially competent while rejected children are aggressive and

do not follow social rules. Neglected children are less aggressive than other groups, but are also frequently alone during play and finally, controversial children are the most aggressive of any group. Most of the studies reviewed took place in middle childhood and since then the research has been expanded to include preschool and adolescents as well. There were also few gender comparisons in Coie et al's (1990) review, as it was conducted before different forms of aggression were distinguished, which has influenced the way we look at aggression and gender today.

Further information regarding links between sociometric status and social behavior are available from a meta-analysis conducted by Newcomb, Bukowski, and Pattee (1993). According to Cillessen and Mayuex (2004), this meta-analysis found effect sizes to be consistent with previous findings with two exceptions. The first is the controversial group (those who are both highly liked and disliked by peers) is the most aggressive group, including rejected children. Coie et al (1990) found the same relation, however, researchers tend to emphasize the rejected group and aggression association and not the controversial one. The second finding that is often ignored in the literature is the neglected group is less social than average, but does not often have high levels of social withdrawal (the effect size in the meta-analysis was almost zero). However, Cillessen and Mayuex warn that methodological issues may play a role in these results because the way in which sociometric status is obtained in these studies varies greatly.

It seems most appropriate that peers be involved in assessing sociometric status and research confirms that peers are privy to information to which teachers and parents may not have access (Cillessen, Terry, Coie, & Lochman, 1992). However,

when evaluating social behaviors, it seems that the multi-rater approach is preferable. There is reported consistency among teacher, peer, and observational rating methods (Newcomb et al., 1993), however self reports should be limited to providing information pertaining to internalizing problems (Cillessen & Mayuex, 2004).

Reactive and proactive aggression. Distinct social-cognitive processes are associated with reactive and proactive aggression (for review, see Crick & Dodge, 1994) and it is within these different theoretical frameworks that psycho-social adjustment problems are hypothesized to emerge. Reactive aggression's origin lies in frustration-aggression models (Berkowitz, 1993) and is a hostile response to a provocation or a perceived threat and usually occurs with negative affect and expression (Dodge & Coie, 1987). Reactive aggression has also been linked to deficits in step 1 (encoding of cues) and step 2 (interpretation of cues) of Crick and Dodge's (1994) social-information processing model, such as hostile attribution bias. Several studies reveal the connection between reactive aggression and these specific social-information processing difficulties (e.g., Crick & Dodge, 1996; Dodge & Coie, 1987; Orobio de Castro et al., 2002). Due to its emotional unregulated and angry nature, it has been proposed that reactive aggression would be associated with negative peer experiences (i.e., lower peer acceptance, peer victimization, e.g., Dodge et al., 1990; Schwartz et al., 1998), and these negative peer experiences would contribute to further psychological adjustment issues, such as internalizing problems (Parker & Asher, 1987).

There is support for the links between reactive aggression and negative peer relations. Dodge et al (1997) found that, in a sample of 504 children followed from kindergarten through third grade, reactive aggression, as measured by their teacher, was related with peer rejection, as measured by peer nominations and teacher ratings of social problems. Proactive aggression was not associated with peer rejection or social problems in this study and throughout the years, the proactive aggressive group did not differ from the non-aggressive group on social preference measures. As in prior studies (i.e., Price & Dodge, 1989), once proactive aggression is statistically controlled for, only reactive aggression is related to negative peer experiences.

More recently, Roach and Gross (2003) found that in their sample of third and fourth graders, higher levels of reactive aggression were related to low social preference, as well as higher teacher ratings of depression. Contrary to prior studies, proactive aggression was associated with higher teacher ratings of depression and while proactive aggression was negatively related with social preference, it was a non-significant relationship. As in other studies (Dodge et al, 1997; Poulin & Boivin, 2000), Roach and Gross relied on teacher ratings of aggression using Dodge and Coie's (1987) reactive/proactive scale. However, Roach and Gross did not find the same two factor solution of the scale that others have previously reported and they found a high correlation (.81) of the two scales and suggest that this overlap in the variables may contribute to their different findings.

Similarly, Morrow et al (2006) found that reactive aggression was uniquely associated with peer rejection after controlling for proactive aggression. In this study of second graders, the authors had teacher, peer, parent, and self-report for all

variables, and although the self-report aggression measures were excluded from the analyses because they failed to meet construct validity criteria, the use of a multi-rater, multi-method design enhances the findings. Another feature of the Morrow et al study that improves upon prior investigations is that the correlations between the aggression types and peer rejection are partial correlations controlling for the other type. This is important because so often reactive and proactive aggression are highly correlated and through this procedure it is possible to determine the unique relations of reactive and proactive aggression to the other variables.

In a meta-analysis of the differential relations between proactive and reactive aggression in childhood and psychological-social adjustment, Card and Little (2006) found that across 13 studies, both reactive and proactive aggression were independently related to poor peer group status overall. When peer group status variables were broken down into social preferences (total nominations for liked minus disliked), peer acceptance (measures of being liked), and peer rejection (measures of being disliked), reactive aggression was related to low social preference. There was a rater effect and when peers rated proactive aggression, there was an association with higher social preference compared to no association when proactive aggression was measured by the teacher. Teacher reports of reactive aggression were significantly related to low social preference while peer reports of reactive aggression were not.

The results of the Card and Little's (2006) meta-analysis also revealed that both proactive and reactive aggression were independently related to peer rejection, but that the relationship was significantly stronger between reactive aggression and rejection than proactive aggression. Aggression reporter also moderated these results

for reactive aggression such that peers and teacher reports of reactive aggression are more strongly related to rejection than observational methods.

Relational and physical aggression. As mentioned, the study of aggression has led to identifying different forms (relational and overt) and functions (reactive and proactive). While the relationship between social adjustment and reactive and proactive aggression has been studied for the past two decades, investigations centering on the relationships between relational and physical aggression and children's psycho-social adjustment have been less common. As Crick and her colleagues have pointed out over the years, the study of aggression has often focused on physical aggression and the boys who exhibit this behavior. The study of girls and the forms of aggression more common to them (i.e., relational) is limited.

Relational aggression has been associated with problems with peers and friendships, internalizing and externalizing problems (e.g., Crick & Grotpeter, 1995; Crick, 1997; Werner & Crick, 1999; Prinstein, Boergers, & Vernberg, 2001; Tomada & Schneider, 1997). Specifically, relational aggression has been linked with concurrent and future peer rejection. The results of a study by Crick (1996) of third, fourth, fifth, and sixth graders found that relational aggression in both boys and girls predicted future peer rejection of the course of an academic year. While the Crick study found a relationship between relational aggression and peer rejection for both boys and girls, other have observed gender differences among the relationship. In one study, Rys and Bear (1997) found that relational aggression in third and sixth grades added significantly to the prediction of peer rejection beyond that accounted for by overt aggression, however this finding was for girls only. Similarly, Roach and Gross

(2003) found that gender moderated the relationship between social preference and relational aggression with less socially preferred girls exhibiting more relationally aggressive behaviors. However, children who display physically aggressive behaviors are not shielded from peer rejection either. In both the Rys and Bear (1997) and Roach and Gross (2003) studies, higher levels of overt aggression were associated with low social preference in both boys and girls.

More recently, Ostrov and Crick (2007), previously described, investigated how reactive and proactive functions of aggression, coupled with relational and physical aggression forms would be associated with future psychological-social adjustment problems. In this particular study, adjustment was operationalized as peer rejection and student-teacher conflict. Consistent with previous research, relational aggression predicted future adjustment problems above and beyond physical aggression, in school-aged children (i.e., Crick, Ostrov, & Werner, 2006). When individual functions of aggression were added, the analyses revealed distinguishing effects between them. Specifically, proactive relational aggression predicted peer rejection and student-teacher conflict above and beyond reactive relational aggression and proactive physical aggression. However, as the authors mention, these results were with a young sample and replication for middle childhood and adolescents will be important additions to our understanding of how form and function of aggression influence future adjustment problems over time.

Internalizing Problems

There is much evidence supporting the associations between aggressive behaviors and internalizing issues, such as depression and anxiety. Researchers have

been studying the connection between these two seemingly opposite behaviors, aggression being external and depression internal, and some have theorized that peer relations, specifically negative peer relations such as peer rejection, may be a mediating factor (i.e., Morrow et al, 2006). Children who act aggressively toward their peers are at risk for rejection by the peer group and this in turn, may lead to negative self-evaluations that can ultimately lead to depressive symptoms. Others have suggested that differences in temperament among aggression types may account for the prevalence of internalizing problems seen in children, specifically reactively aggressive ones (Vitaro, Brendgen, & Tremblay, 2002).

Reactive and proactive aggression. It appears as though depression is related to reactive aggression but not proactive aggression. Based on the theory that aggressive children become depressed because of their negative experiences with their peers, it is no surprise that reactive aggression would be associated with feelings of depression. As previously stated, reactive aggression is linked to peer rejection (i.e., Card & Little, 2006). Reactive aggression appears to elicit dislike from peers and may result in more negative feedback from peers, which may then result in a greater likelihood to become aware of the rejection and internalize those feelings. In support of this theory, there are several studies that have found this link between reactive aggression and depression. An alternative view is the possibility that temperamental dispositions, such as high reactivity to threatening or frustrating situations, describe reactive individuals (Vitaro et al., 2002). Reactive aggressive children have been characterized as having poor emotional regulation, especially negative emotion, as well as being more inhibited and anxious than other children

(Kagan, Reznick, & Gibbons, 1989). These dispositional tendencies may contribute to the association found between reactive children and internalizing problems, but not found in proactive children.

In one study, Vitaro, et al (2002) hypothesized that reactively aggressive children would report more depression than proactive-only or reactive-proactive aggression children. Using Dodge & Coie's (1987) Reactive/Proactive scale, a sample of 1,245 Canadian children in grades 4, 5, and 6 (predominantly Caucasian) were rated by their teachers and then grouped into four categories, reactive-only, proactive-only, reactive-proactive, and non-aggressive. The students also completed the CDI (Kovacs, 1983), a self-report measure of depressive symptoms. The reactive aggressive children were more likely to report feeling depressed than any other group. The authors suggest that these results are in line with other studies of reactive and proactive children that have found reactively aggressive children report having fewer friends and feeling more unhappy than proactively aggressive children (Day et al., 1992) as well as feel socially isolated and victimized by their peers while proactive children are not (Boivin, Vitaro, Hodges, & Poulin, 1998).

Similarly, Roach and Gross (2003) found that when teachers were both the raters for aggression and depression, reactive aggression was associated with higher ratings of depression. Contrary to prior findings, Roach and Gross also found in their sample that teacher rated proactive aggression was associated with higher teacher ratings of depression. They speculate that their inconsistent results are due to the strong correlation between the reactive and proactive scale. Finally, in their meta-analysis, Card and Little (2006) found that among eight studies, that reactive

aggression is more strongly related to internalizing problems than proactive aggression. There was an observed reporter difference between teachers and peers, with teachers' ratings of reactive aggression related to higher levels of internalizing problems and peer aggression ratings related to lower levels of internalizing problems, as measured by both teacher and self ratings.

Relational and physical aggression. The relationship between relational aggression and internalizing problems is beginning to become clearer due the recent rise in studies interested in such connections. Evidence from several studies indicates that relational aggression is associated with high levels of concurrent internalizing difficulties (e.g., Crick, Ostrov, & Werner, 2006; Prinstein, Boergers, & Vernberg, 2001; Roach & Gross, 2003). Crick (1997) found that in a large sample of third through sixth graders, relationally aggressive children, as measured by peer nominations, were more internalizing than their non-relationally aggressive peers, based on teacher reports of internalizing behavior. When Roach and Gross (2003) investigated the differences in teacher rated depression and teacher rated relational and physical aggression, they too found that higher ratings of relational, but not physical aggression co-occurred with higher teacher ratings of depression.

Crick, Ostrov, and Werner (2006) point out that many of the studies in the past measured children's functioning at only one point in time. They claim that longitudinal studies will greatly add to the knowledge of early identification of relationally aggressive children and the risk it poses to future maladjustment. The goal of their longitudinal study was to see if relational aggression predicted future psycho-social adjustment problems, independent of physical aggression. They used

peer nominations of aggression and teacher reports of adjustment to correct for shared-method variance problems. Another important addition to this particular study was the broad definition of adjustment and several symptoms of internalizing and externalizing problems were measured using the TRF (Achenbach, 1991). Using a sample 234 third graders during Time 1 and retaining 224 of the same children in fourth grade for Time 2, they formed groups of relationally aggressive children (33 total, 25 girls), physically aggressive children (39 total, 11 girls), combined relational and physically aggressive children (34 total, 13 girls) and non-aggressive children (134 total, 70 girls) based on a peer nomination measure of aggression.

The results indicate that exhibiting both relational and physical aggression increases the likelihood of exhibiting maladjustment. The combined aggressive group displayed more withdrawn behavior than the non-aggressive group and the relationally only group at time 2 and that the combined group was more anxious at time 2 than the physically aggressive group. The combined group also displayed more aggression, as measured by the teacher, than all other groups and the combined group was more delinquent than the other groups. These effects were also seen over time, as measured by time 1 and time 2. The study also found that after controlling for physical aggression, relationally aggressive children were more withdrawn and anxious/depressed at time 2 than non-aggressive children. Relational aggressive children were also more delinquent and aggressive at time 2 after controlling for physical aggression compared to non-aggressive children.

Crick, Ostrov, and Werner (2006) conclude that relational aggression is a powerful indicator of psycho-social adjustment difficulties and that relational

aggression combined with physical aggression appear to be particular strong indicator of maladjustment, specifically internalizing and externalizing problems. Other investigations have found a relationship between relational aggression and externalizing difficulties. Roach and Gross (2003) found that fighting, as rated by both peers and teachers, was the best predictor of relational aggression, accounting for 31% of the variance and Crick (1997) found that relationally aggressive children were significantly more externalizing (according to teacher reports) than their peers.

A number of studies have shown that relational aggression is more typical and normative for girls than physical aggression (e.g., Crick, 1996; Crick, 1997; McNeilly-Choque et al., 1996). In addition, relational aggression is more stressful and emotionally problematic for girls compared to boys (e.g., Crick, Grotpeter, & Bigbee, 2002). These two observations highlight the possible social adjustment effects relational aggression can have for children, specifically girls and that looking for gender differences is important. For example, Henington et al (1998) found in a sample of second and third graders, relationally aggressive girls, as rated by their peers, were more likely to be withdrawn and depressed than relationally aggressive boys, according to their teachers. However, there are studies that provide evidence for a link between engagement in nonnormative forms of aggression and adjustment problems by showing that relationally aggressive boys are more at risk for difficulties than relationally aggressive girls and physically aggressive girls are more at risk than physically aggressive boys (Crick, Ostrov, & Werner, 2006). Crick (1997) showed that overtly aggressive girls were rated as more externalizing than overtly aggressive boys, relationally aggressive boys and girls, and non-aggressive children and that

relationally aggressive boys were more maladjusted (a composite of externalizing and internalizing) according to their teachers than relationally aggressive girls and non-relationally aggressive boys and girls. Atypical gender behavior may elicit more negative reactions from peers and teachers, which then results in greater adjustment difficulties.

Overall, there appears to be support in the literature for a general association between aggression and internalizing problems. Specifically, reactive aggression is linked to feelings of depression rated by teachers and the children themselves. In regards to relational and physical aggression, it appears that gender influences the connection between aggression and internalizing behaviors. Gender non-normative aggression (relational for boys and physical for girls) appears to be associated with greater adjustment difficulties than gender normative aggression (Crick, 1997).

Externalizing Problems

Aggression, by definition, is an externalizing behavior. In the literature, externalizing behaviors have been defined using a variety of actions, such as delinquency, hyperactivity, conduct problems, as well as aggression. Not surprisingly, several studies have shown an association between aggression and externalizing behaviors. Crick (1997) found that overtly aggressive children, as rated by their teachers, were also significantly more externalizing, as rated by their teachers using the CBCL (Achenbach & Edelbrock, 1991), than non-overtly aggressive children. In addition, relationally aggressive children were rated by teachers as significantly more externalizing and as more internalizing than non-aggressive peers. Those children who exhibited both relational and overt aggression were more

externalizing than any other group, including overtly aggressive children. Others have found similar relationships between both relational and overt aggression and externalizing behaviors. For example, Prinstein et al (2001) found that in a sample of adolescents, that both relational and overt aggression were uniquely associated with externalizing behaviors, as measured by self-report. Gender appears to be a potential moderating variable between aggression type and externalizing behavior, but its role is still unclear. Prinstein et al (2001) found that relational aggression was associated with externalizing behavior for girls, but not boys, where Crick found that overt aggression was associated with externalizing behavior for girls, but not boys.

In studies that look at the relationship between reactive and proactive aggression and externalizing behaviors, delinquency is the most common variable. Vitaro et al (1998) found that proactive aggression in children predicted adolescent delinquency whereas reactive aggression did not. However, Card and Little (2006) found a small to moderate correlation between both reactive and proactive aggression and delinquency in their meta-analysis. They reported an age effect, showing that the relation between reactive aggression and delinquency was higher in samples of older children. As Card and Little note, caution is warranted because most of the studies measuring delinquency involve samples of older children (above age 8).

Prosocial Behavior

In the past, much of the research about children's social adjustment has focused on negative behaviors, such as aggression. The role of positive behaviors, such as prosocial acts, has been largely excluded or studied independently of negative behaviors (Crick, 1996). Although the research has been limited, prior studies

suggest that children who are aggressive and lack prosocial skills may have a higher risk for adjustment problems than children who are either aggressive or lack prosocial skills, but not both (Coie, Dodge, & Coppotelli, 1982; Crick, 1996). Prosocial behavior can be defined as a voluntary and intentional behavior that benefits another person (Eisenberg & Miller, 1987). This definition of prosocial behavior encompasses many different behaviors, however, researchers actually assess very few specific behaviors, most of which concentrate on sharing, helping, and altruistic behavior (Greener, 2000). Relationally inclusive acts, defined as behaviors that initiate and sustain relationships with others (Greener & Crick, 1999), have recently been included in measures of prosocial behavior and appear to be more salient and normative behaviors according to middle childhood aged children than the more traditional prosocial behaviors typically studied.

The relationship between prosocial behavior and social acceptance is complex and continues to be studied. However, the available evidence suggests that prosocial behaviors and social acceptance are conceptually different (Greener & Crick, 1999). In the previously described Crick (1996) study, prosocial behavior was positively related to peer acceptance and negatively related to peer rejection after controlling for aggression. This finding was consistent for both boys and girls when peers rated prosocial and aggressive behaviors but not when teachers rated boys' prosocial and aggressive behaviors. When teachers were asked to assess prosocial and aggressive behaviors in girls, prosocial behaviors were positively related to peer acceptance only. Crick's results also show how relative amounts of prosocial skills predict changes in children's social adjustment. Specifically, a lack of prosocial skills in the

beginning of the year predicts more peer rejection at the end of the year for boys when measured by peers only, not teachers. For girls, a lack of prosocial skills in the beginning of the school year predicted less peer acceptance at the end of the year, when measured by both peers and teachers, and predicted more peer rejection when social behaviors were measured by their teachers.

The relationship between the functions of aggression (reactive or proactive) and prosocial behaviors has been studied to some extent. The results of Card and Little's (2006) meta-analysis reveal that reactive aggression is related to low prosocial behavior, however, proactive aggression has little to no association with prosocial behavior independent of reactive aggression. Interestingly, this finding contradicts how researchers describe proactive aggressive children, which often includes leadership skills and being cooperative (Dodge & Coie, 1987; Price & Dodge, 1989). Card and Little found reporter moderation that accounted for their findings. Peer reports of proactive and reactive aggression had stronger correlations with lower prosocial behavior compared to teacher reports of aggression, which is consistent with Crick's (1996) study that was not included in the meta-analysis. However, the relationship between aggression and lower prosocial behavior was for reactive aggression only. There is one study by Price and Dodge (1989) that found a positive relationship between proactive aggression and prosocial behavior. Using observations of aggression, Price and Dodge found that in a sample of five and six year olds, proactive aggression was positively associated with prosocial behavior and peer status.

Statement of the Problem

During the last two decades, much attention has been given to defining, measuring, and predicting children's aggressive behavior. One particular area of research that has emerged is to study the form and function of aggression in the context of peer relationships. Investigators have distinguished between physical forms of aggression as a behavior intended to harm, hurt, or injure another person (Coie & Dodge, 1998) and relational aggression as a behavior that uses the relationship or friendship as the source of harm, such as spreading rumors about another (Crick & Grotpeter, 1995). Another area of interest has been to differentiate between functions of aggression, mainly between reactive aggression, an aggressive response to a perceived threat motivated by hostility, and proactive aggression, an aggressive behavior to fulfill a goal (Dodge & Coie, 1987).

Many studies have shown an association between physical aggression and future adjustment problems (e.g., Coie & Dodge, 1998). A more limited literature has explored the association between relational aggression and social-psychological adjustment outcomes (Crick & Zahn-Waxler, 2003). Past work has also found that reactive and proactive aggression are differentially related to adjustment outcomes (Card & Little, 2006). However, some have begun to question whether or not reactive and proactive aggression are distinct functions and if they can be assessed separately due to the high correlations found in the literature between the two (Bushman & Anderson, 2001). There is emerging evidence that helps support reactive and proactive aggression as distinctive functions of behavior by assessing aggression by both form (physical or relational) and function (reactive or proactive) (Little et al.,

2003). This new conceptualization could help more clearly classify aggressive behavior for research purposes. Using an integrative approach might also point to different patterns of associations between aggression and social-psychological adjustment outcomes. Perhaps the patterns between aggression and adjustment that have been found previously using the dichotomous approach of reactive/proactive or physical/relational aggression will become more refined when tested under a new conceptualization of aggression.

Support for a multi-faceted taxonomy of aggression has been found through self-reports (Little et al., 2003). In Little et al.'s investigation, students were asked about aggressive behaviors and the intent behind the action. For example, a pure overt aggression item was "I'm the kind of person who hits, kicks, or punches others", a reactive overt item was "If others have angered me, I often hit, kick, or punch them", and an instrumental (proactive) overt aggression item was "I often hit, kick, or punch to get what I want". By using self-report, the authors are able to directly ask the person who is acting aggressively why they were acting in that manner (i.e., the function of their behavior). It is not clear whether the same breakdown of aggression would emerge from reporting methods other than self-report. Would teachers and peers be able to report the intent behind another's action?

To date, there is little evidence that relates an approach of aggression classification that integrates form and function to social-psychological adjustment measures. It is therefore critical to look at these alternatively theorized aggression scales and determine how adjustment outcomes are differentially related to types of aggression. Despite the plethora of evidence that there are unique associations

between types of aggression and adjustment, perhaps taking a different perspective of aggressive behavior into account will produce different relations that will better inform intervention and prevention.

Thus, the current study seeks to answer the following questions:

1. What aggression scales will emerge from the current data? Specifically, will the scales come out as intended by the original authors, or will an alternative conceptualization emerge?
2. What are associations between the different types of aggression, as measured by the newly configured teacher and peer rated aggression scales, and the following social-psychological adjustment outcomes: low peer acceptance, internalizing problems, externalizing problems, and prosocial behaviors?
3. What is the unique contribution of each type of aggression when predicting social-psychological adjustment outcomes?
 - a. Within informant: To further support existing literature, the current study will look at the question of relationships separately for peers and teachers.
 - b. Across informant: Due to often disagreement between informants, the current study will look to see if one informant contributes more than the other in terms of predicting adjustment outcomes.

4. Are there observed gender differences among the different types of aggression? If there are observed difference, does gender moderate any of the associations between aggression and adjustment variables?
- a. Based on previous studies, these questions will be answered within informant.

Table A
Expected findings for Question 1

	PRRel	PPOv	PPRel	TRRel	TPOv	TROv
Low peer acceptance (T)	+	+	+	+	+	+
Low peer acceptance (P)	+	+	+	+	+	+
Internalizing:						
Anxiety (S)	+	*	+	+	*	?
Depression (S)	+	*	+	+	*	?
Internalizing (T)	+	*	+	+	*	?
Externalizing(T)	+	+	+	+	+	+
Prosocial (T)	-	-	-	-	-	-
Prosocial (P)	-	-	-	-	-	-

+ Positive association, - Negative association, * No association, ? No hypothesis made

PRRel (Peer Reactive Relational), PPOv (Peer Pure Overt), PPRel (Peer Pure Relational), TRRel (Teacher Reactive Relational), TPOv (Teacher Pure Overt), TROv (Teacher Reactive Overt)

Based on the review of the literature, the following hypotheses are expected in response to the research questions (Table A).

1. Low peer acceptance and aggression
 - a. Both teacher and peer measures of low peer acceptance will be positively associated with all types of aggression.
2. Internalizing and aggression

- a. All reactive functions and relational forms of aggression will be associated with internalizing problems (as rated by teacher and self), however, pure overt aggression will not.
3. Externalizing and aggression
 - a. There will be a positive association between all forms and functions of aggression and externalizing problems, as measured by teachers because by definition, the two constructs overlap.
4. Prosocial behavior and aggression
 - a. Prosocial behaviors measured by both teachers and peers will be negatively associated with all types of aggression
5. Unique contributions of aggression types to the prediction of adjustment
 - a. No specific hypotheses will be made because this way of categorizing aggression has not been looked at before.
 - b. Prosocial behaviors are hypothesized to add significantly to aggression in the prediction of adjustment.
6. Gender differences
 - a. There will be observed gender differences among the aggression types. Specifically, consistent with a majority of the literature, girls will be more relationally aggressive than boys and boys will be overtly aggressive than girls.
 - b. Gender will also interact with aggression to predict adjustment problems.

- i. Specifically, boys who are overtly aggressive and/or reactively aggressive will display more externalizing problems, whereas girls who are overtly and/or reactively aggressive will have less peer acceptance and more internalizing scores
- ii. Boys who are relationally aggressive will display more externalizing problems and less peer acceptance, whereas girls who are relationally aggressive will have more externalizing and internalizing problems and less peer acceptance.

Chapter 3: Methods

Participants

The participants were recruited from six second and third grade classrooms in an ethnically and culturally diverse elementary school. The current study utilizes archival data from a short-term longitudinal study. The sample consists of 107 participants, 63 male and 44 female and 57 second graders and 50 third graders. Sixty seven percent of the participants were African American, 17% were Hispanic, 11% were Asian American, and 5% were Caucasian. Participation required parental consent as well as student assent. Ninety-nine students completed the data collected at time two (May). Time two data was used because it gave more opportunity for the teachers and students to get to know one another. The six participating teachers were all female, five were African American, one was Caucasian, and they varied in teaching experience. The school had a no tolerance policy toward aggressive behavior. There were clear and swift consequences for students who engaged in such actions.

Measures

Aggression

Aggression was measured from two different sources, a teacher report measure, and a peer report measure. Teachers reported on students' aggressive behavior using Teacher Rating Scale for Aggressive Classroom Behavior (Reactive/Proactive, Re/Pro, Dodge & Coie, 1987) and Children's Social Behavior Scale-Teacher Form (CSBS-T, Crick, 1996). The Re/Pro scale contains a total of six

items, three that measure reactive aggression and three that measure proactive aggression. Teachers were asked to rate students on items assessing aggression using the following 5-point Likert scale: never, rarely, sometimes, often, and almost always on items such as “When this child has been teased or threatened, he or she strikes back” and “This child threatens and bullies others”. Dodge and Coie report the internal consistency of reactive aggression was 0.88 and the internal consistency for proactive aggression was .87. The correlation between the reactive scale and the proactive scale was .76.

The CSBS-T consists of eleven items, seven of which assessed relational aggression and four of which assess overt aggression and were intended to parallel the items contained in the peer nomination measure described below. The response scale for each item ranged from 1 (never true of this child) to 5 (almost always true of this child). Crick reports the internal consistency of the relational scale to be .94 and for the overt scale to be .94. The correlation between relational and overt aggression was .77. On both the Re/Pro and CSBS-T, a student’s score on each scale was considered as the mean item rating, standardized by classroom.

A peer nomination instrument, The Child Social Behavior Scale-Peer (CSBS-P, Crick, 1997) was used to assess relational and overt aggression. The measure consists of three subscales, two of which measure aggression. The relational aggression subscale contains five items such as “Kids who tell friends they will stop liking them unless they do what they say”. The overt aggression subscale also consists of five items such as “Kids who hit”. The third scale measures prosocial behaviors and contains four items that also serve as positive filler items (e.g., Kids

who do nice things for others). Participants were provided with a class roster and were asked to nominate as many classmates as they wished who best fit the behavioral description provided for each of the items on the measure. The number of nominations participants received from classmates for each of the items was standardized within class. The standard scores for the items of a subscale were then summed to yield total subscale scores.

As previously described, in the current investigation, an exploratory factor analysis was conducted to see if the original scales should be used as intended, or if another model better explained the data. The results indicated that new teacher aggression scales should be created to assess aggression using an alternative approach. The following six scales were the result: Teacher Reactive Relational, Teacher Reactive Overt, Teacher Pure Overt, Peer Reactive Relational, Peer Pure Relational, and Peer Pure Overt. Reliabilities of teachers and children's responses for these new scales were favorable for this sample with alphas ranging from .75 to .95.

Peer Acceptance and Peer Rejection.

Teachers: Peer rejection was assessed via teacher reports on the items borrowed from the Peer Nomination Inventory (Perry, Kusel, & Perry, 1988) and the Revised Class Play (Masten, Morison, & Pelligrini, 1985). Teachers responded on a 5-point Likert scale: never, rarely, sometimes, often, and almost always, on items such as "Is often left alone" and "Is excluded from the group". Past investigations have found high internal consistency for both measures, with reported alpha coefficients for the Peer Nomination Inventory of .96 (Perry et al., 1988) and .85 for the Revised Class Play (Masten et al., 1985). An individual's score is the sum of the

items, standardized by class. In the present study, the internal consistency for this scale is .77.

Peers: Peer acceptance was measured by asking participants to rate each member of their class using the following 3-point Likert scale: 1=I like this child the least, 2=I like this student a little, and 3=I like this student a lot. Each child's scores were averaged and then turned into standard scores by class for a peer acceptance score.

Internalizing and Externalizing Problems

Self: The students have completed two self-report measures. The first measure is the 10-item short version of the Children's Depression Inventory (CDI-S; Kovacs, 1985), which measures feelings of hopelessness, loss of interest in activities, and despondency. The instrument is derived from the 27-item CDI. Both the long and short form generally yield comparable results (Kovacs, 1992). Respondents rate whether they have experienced each symptom in the past 2 weeks on a 3-point scale (0= sometimes, 1= many times, 2= always). Raw scores are converted into *T* scores. A *T* score greater than 65 is generally regarded as clinically significant (Kovacs, 1992). The CDI-S demonstrates good internal consistency, with an alpha reliability coefficient of .80 (Kovacs, 1985) and acceptable test-retest reliability coefficients ranging between .74 and .77 in a non-patient sample (Smucker, Craighead, Craighead, & Green, 1986).

The second measure is the 10-item Multidimensional Anxiety Scale for Children (MASC-10; March, 1997). MASC-10 items are designed to assess anxiety symptoms across four domains; physical symptoms ("I feel sick to my stomach"),

social anxiety (“I’m afraid that other kids will make fun of me”), separation anxiety (“I try to stay near my mom and dad”), and harm avoidance (“I check to make sure things are safe”). Respondents rate whether each statement is “Never true about me”, “Rarely true about me”, “Sometimes true about me”, or “Often true about me”. A total anxiety score is generated and converted into a *T* score. The MASC-10 has satisfactory internal consistency, with an alpha reliability coefficient of .90 (March, Parker, Sullivan, Stallings, & Conners, 1997) and has a test-retest reliability coefficient of .88 (March & Sullivan, 1999).

Teachers: The teachers completed the Internalizing and Externalizing Composite Scale of the Behavioral Assessment System for Children (BASC; Reynolds & Kamphaus, 1992). Teachers rate the described behaviors on a four-point Likert Scale from Never (1) to Almost Always (4). Scores are then converted into *T* scores. The Internalizing composite consists of three subscales, Anxiety, Depression, and Somatization. The reported internal consistency of the Internalizing composite is .91 and the test-retest reliability coefficient is .81. The Externalizing Composite also consists of three subscales, Hyperactivity, Aggression, and Conduct Problems. The reported internal consistency of the Externalizing Composite is .95 and test-retest reliability coefficient is .91. In the past, the Internalizing Composite of the teacher BASC shows a strong correlation (.73) with the Internalizing Scale on the Achenbach Teacher Report Form (TRF) and the Externalizing Composite shows a strong correlation of .88 with the Externalizing Scale on the TRF (Reynolds & Kamphaus, 1992).

Prosocial Behavior

Teachers and peers: Embedded in the CSBS-T and the CSBS-P are four parallel items that assessed prosocial behavior, such as “Helps others” and “Kids who try to cheer others up.” Teachers responded using the same 5-point scale they used when assessing aggression and peer rejection and peers used the same nomination method described when assessing aggression. The reported internal consistency for the teacher prosocial scale is .93 (Crick, 1996) and for the peer prosocial scale is .91 (Crick & Grotpeter, 1995).

Table B provides a summary of all of the measures and how the variables were calculated.

Procedures

The current investigation is part of a larger longitudinal study where other measures were administered. The school psychologist and a team of graduate students described the purposes of the study to the students in their classrooms. In the fall and spring of the school year, each student completed all the measures during two one-hour long interviews conducted individually. After parental consent, the students also gave their assent for participation at the beginning of data collection and, they were told they could choose not to participate if they so wished. The interviewer administered the instruments described in the “measures” section in two one-hour sessions. Time 1 was administered in the middle of October and Time 2 was administered at the end of May. All instruments were introduced by the interviewer by explaining to the student what they would be doing and how they were to answer the questions. The interview had standardized procedures so that all data were

collected in the same manner and all written items were read aloud to the students. Following data collection, the research team scored, coded, and entered all of the data in teams of two or three so inter-reliability could be calculated and data entry checked. For the present study, the data collected during Time 2 is utilized. Teachers in the study were asked to complete their measures during two school days when substitutes were available to cover their classes.

Table B

Table of measures

<u>Variable</u>	<u>Measure</u>
Teacher Aggression	Integrated aggression scales items summed (standard score by class)
Peer Aggression	Integrated aggression scales items summed (standard score by class)
Peer rejection (teacher)	Peer rejection items summed (standard score by class)
Peer acceptance (peer)	Average liking score (standard score by class)
Anxiety (self)	MASC-10 (T score)
Depression (self)	CDI-S (T score)
Internalizing (teacher)	BASC internalizing composite (T score)
Externalizing (teacher)	BASC externalizing composite (T score)
<u>Prosocial (peer & teacher)</u>	<u>Prosocial items summed (standard score by class)</u>

Analyses

Descriptive statistics were calculated for all study variables and are presented in Table 10. To examine the various research questions of the study, correlations will be conducted to assess the association between the types of aggression and the different adjustment outcomes. In order to assess the contribution of each type of aggression to each adjustment variable, a series of hierarchical multiple regressions will be conducted, where the adjustment variables are the dependent variables and types of aggression are the predictors. To assess the relative contribution of prosocial behaviors to the prediction of social adjustment, prosocial scores will be added as a

step after children's aggression scores in the regression analyses. The unique role of gender will be examined, as well as the interaction between gender and various types of aggression. Next, to investigate potential moderating effects of gender in relating aggression with the adjustment variables, similar to others (i.e., Roach & Gross, 2003), interaction terms will be added to the hierarchical regression equations for each dependent variable. A MANOVA will be conducted to test for gender differences among the aggression types based on peer and teacher ratings separately.

Chapter 4: Results

Aggression Scale Construction

In this study, items from various pre-existing aggression rating scales were used to ask teachers and peers about students' aggressive behavior. The items represented four main aggression types, reactive, proactive, relational, and overt. Specifically, these items were from Dodge and Coie's (1987) reactive/proactive teacher rating scale and Crick and Grotpeter's (1995) Children's Social Behavior Scale- Teacher and Peer forms. Past studies have reported moderate to large correlations between reactive and proactive measures (e.g., $r=.77$, Dodge & Coie, 1987; $r=.80$, Price & Dodge, 1989; $r=.75$, Poulin & Boivin, 2000). In this study, the correlations between the scales as they were originally intended yielded a correlation between the Dodge and Coie's reactive/proactive scale of $r=.683$. Relational and overt aggression are also usually at least moderately correlated in the literature (e.g., $r=.63$, Crick, 1997; $r=.54$, Crick & Grotpeter, 1995). In this study, a larger correlation of $r=.718$ between relational and overt aggression was observed, as measured by Crick's original scale. Given the high correlation between the types of aggression in this sample and the high correlations often found between both reactive/proactive and relational/overt when form and function of aggression are not considered, rather than using the scales as they were given, an exploratory factor analysis was conducted to see what conceptualization the items might better support.

A Principal component analysis using Equamax rotation was used to explore the data. Equamax is an orthogonal rotation combining Varimax and Quartimax

methods to produce a simplification of variables on factors with maximum variance (Browne, 2001). In other words, both the number of variables and the number of factors are minimized. Equamax rotation was used to balance the need for interpretable factors with the need for simplified, interpretable variables and because more than one factor was expected to emerge from the data. The following results were obtained.

Peer Rated Aggression PCA Results

The peer aggression scale included items describing relational and overt aggression. All raw scores from the peer data were converted into standard scores by class before any further analyses were run. It was determined that in order for an item to be placed in a scale, the item had to have a correlation coefficient of at least .600 to its factor, with no other correlation coefficients to other factors over .400. The items that overlapped on two or more factors were dropped from the analyses until only pure factors remained. Three factors with eigenvalues over 1 were extracted, accounting for 63% of the variance. The Kaiser-Meyer Olkin measure of sampling adequacy was .912 and Bartlett's test of sphericity was significant. Five items were cross loaded and were dropped from the analyses for the time being due to failure to fall within the stated criteria above. The remaining items were factor analyzed again and two clear factors emerged. Table 1 shows the factors extracted from the peer data. Factor One, Pure Overt Aggression contains items that describe physical aggression, but the intent behind the action is unknown. In contrast, factor two, Reactive Relational Aggression, contains items that suggested relational items that were an

emotional reaction against others. The students' scores for each type of aggression were summed to create scales of the same name as the factors (Table 3). Cronbach's alphas were computed and were found to be .75 for the Peer Reactive Relational Aggression scale and .85 for the Pure Overt Aggression Scale.

Table 1
Factor Loadings for the Peer Nomination of Aggression Instrument

Item	Factor	
	Pure Overt	Reactive Relational
Kids who say they will beat up	.822	
Kids who hit	.819	
Kids who push	.818	
Kids who when mad get even by keeping others from with person being friends		.868
Kids who when mad try to keep certain people from group		.770
Kids who when mad ignore person		.643

As stated above, some of the original items did not meet the criteria to be on a factor because they cross loaded onto more than one factor. These four items were factor analyzed and one clear factor emerged with factor loadings ranging from .78 to .88 (Table 2). The items from this cross-loaded scale describe pure relational aggressive acts, where the function of the behavior is unknown. A Peer Pure Relational aggression scale was created using the mean of these items and Cronbach's alpha was .87, which interestingly is higher than the Reactive Relational and Pure Overt scales, which may be because there are more items. Caution is warranted when interpreting this cross-loaded scale. Is peer pure relational aggression really a distinct construct? The decision to keep the peer pure relational scale in further analyses despite the cross loadings was made based on the fact that the original scales were

empirically validated and removing items is discouraged because the reduced scales have not been proven to adequately capture the construct of interest.

Table 2
Factor Loadings for the cross loaded Peer Aggression Items

	<u>Factor</u> <u>Pure Relational</u>
Kids who tells friends they will stop liking them unless the friends do what they say	.888
Kids who insult	.875
Kids who call others names	.850
Kids who try to make other kids not like a person by spreading rumors	.779

Next, correlations between all of the peer aggression scales were computed. Similar to Little et al (2003) and others (e.g., Crick, 1997), there was a strong correlation between the peer pure overt and the peer pure relational scale ($r=.77$, $p<.001$). There was also a strong correlation between Peer Reactive Relational aggression and Peer Pure Relational ($r=.71$, $p<.001$). A more moderate correlation was observed between the two newly constructed scales for the current study, the Peer Pure Overt and Peer Reactive Relational ($r=.577$, $p<.001$). Perhaps because the aggression scales in this study attempted to distinguish between form and function, some of the higher correlations in the past were not observed. The Pure Relational aggression scale correlated highly with both the Pure Overt and Reactive Relational aggression scales ($r=.77$ and $.72$ respectively, $p<.01$). All correlations involving the peer scales are in Table 9. Due to the high associations between the pure overt and reactive relational scales and the cross-loaded scale, pure relational, partial correlations were conducted to see how well pure overt and reactive relational aggression would be related after controlling for pure relational aggression. The

results showed that the overt and relational aggression scales are not correlated once pure relational aggression is accounted for ($r = .031$). Table 9 shows all of the correlations between the aggression scales used in the current study.

Table 3
Items in the Peer Aggression Scales

Reactive Relational Aggression

Kids who when mad get even by keeping others from being friends with a person

Kids who when mad keep others out of a group

Kids who when mad ignore others

Pure Overt Aggression

Kids who tell others they will beat them up

Kids who push others

Kids who hit

Pure Relational Aggression (cross-loaded)

Kids who insult

Kids who tell friends they will stop liking them unless they do what they say

Kids who call others names

Kids who spread rumors

The original relational and overt scales are shown in Table 4 for comparison to this study's scales. One of the main differences between the two scales is the placement of the verbal aggression items originally on the overt scale ("Kids who insult" and "Kids who call others names") and is now on the pure relational scale. These items cross loaded on both factors and clustered with other relational items that describe harming a relationship through words. The reactive relational scale is also unique because it contains those items that clearly state the emotion behind the action (i.e., when the child is mad).

Table 4
Items in Crick & Grotpeter (1995) CSBS-P

Relational Aggression

Kids who spread rumors

Kids who when mad, get even by keeping others from being friends with a person

Kids who tell friends they will stop liking them unless they do what they say
Kids who when mad ignores others
Kids who when mad keeps others out of a group

Overt Aggression

Kids who hit
Kids who insult
Kids who push
Kids who tell others they will beat them up
Kids who call others names

Teacher PCA Results

Teachers were asked to rate students on different types of behavior using Dodge and Coie's (1987) reactive/proactive aggression scale and Crick's (1996) relational and overt aggression scale for teachers (CSBS-T). In addition, teachers were asked to report peer rejection, victimization and prosocial behaviors within the same measure. A factor analysis of only the aggression scale items was conducted using an Equamax rotation. The same criteria used for the peer data were applied to the teacher data to evaluate the factors (i.e., for an item to be placed on a factor, the item had to have a correlation coefficient of at least .600 to its factor, with no other correlation coefficients to other factors over .400). Originally, the standard scores by classroom were used in the analyses, however, after reviewing the descriptive statistics of the items, it was discovered that certain items had low variability in the classrooms and therefore the data could not be converted into standard scores in some classes. There was no problem with missing data. The low variability may have occurred because some of the affected items measured extreme forms of aggression and few students in this sample appeared to demonstrate these behaviors. It was important to keep all the items initially in the factor analyses because the items were

from existing scales that researchers have used in the past, and it was intention of this study to evaluate those scales. In order to retain all of the items, it was decided that raw scores be used in the factor analyses of the teacher rated aggression scales so that all participants and items could be studied.

Four factors with eigenvalues over 1 were extracted from the first factor analysis and accounted for 77% of the variance. The KMO was .771 and Bartlett's test of sphericity was significant. Inspection of the item loadings revealed several items had double-loadings on two or more factors. These items were dropped for the time being, and the remaining items were factor analyzed a second time. This time, three factors with eigenvalues over 1 were extracted and only one item had a double-loading ("Breaks rules in games"). This item was also dropped in further analyses and the remaining items were factor analyzed a final time and those results are shown below in Table 5.

Table 5
Factor Loadings for the Teacher Rated Aggression Instrument

<u>Item</u>	<u>Factor</u>		
	Reactive Relational	Reactive Overt	Pure Overt
Gets others to be angry at someone or ignore others	.940		
Keeps others from joining group	.848		
Gets others in trouble with friends	.826		
Spreads rumors or gossips	.790		
Gets others to gang up on a peer	.786		
Strikes back when teased		.894	
Blames others in a fight		.867	
Gets into verbal arguments		.753	
Overreacts angrily to accidents		.730	
When frustrated, quick to			.905

fight	
Starts fights with peers	.895
Threatens and bullies others	.707

Similar to the peer aggression factors, teachers' scores for each type of aggression were summed which created three scales bearing the same name as the factors that resulted in three teacher aggression scales (Table 6) and standard scores by classroom were then obtained. Cronbach's alpha was .91 for teacher reactive relational aggression, .89 for teacher reactive overt aggression, and .89 for teacher pure overt aggression. While there were moderate to high correlations among the teacher aggression scales (see Table 10), these were not as high as some have previously reported (i.e, Polman et al, 2007). The correlation between teacher reactive relational and teacher reactive overt was significant ($r=.29, p<.01$), and the correlation between teacher reactive relational and teacher pure overt was also significant ($r=.20, p<.05$). In contrast to the peer results, teachers appear better able to differentiate between both the forms and functions of aggressive behavior. Not surprisingly, there was a strong correlation between teacher reactive overt and teacher pure overt ($r=.69, p<.01$) because the two scales are inquiring about the same behavior and only the intent behind the action is different. It may be more difficult for a teacher to know the intent behind an action than the children themselves, which can explain why Little et al (2003) found support for different scales for pure forms of aggression as well as scales that contained the function of the aggressive behavior.

Table 6
Items in the Teacher Aggression Scales

Reactive Relational Aggression
 When angry, gets others to ignore
 Keeps others from joining their group when angry

Gets others in trouble with friends
Spreads rumors about other children
Gets others to gang up on a peer

Reactive Overt Aggression
Strikes back when teased
Blames others in a fight
Gets into verbal arguments
Overreacts angrily to accidents

Pure Overt Aggression
When frustrated, quick to fight
Starts fights with peers
Threatens and bullies others

Table 7 shows the original Dodge and Coie reactive/proactive scale items. By comparison, the scales in the present study differentiate between reactive relational and reactive overt aggression. It appears as though some children behaved relationally aggressively when they were feeling angry, where others acted physically aggressive.

Table 7

Items in Dodge & Coie (1987) Teacher Reactive/Proactive Scale

Reactive Aggression

Blames others in a fight
Strikes back when teased
Overreacts angrily to accidents

Proactive Aggression

Gets others to gang up on a peer
Threatens and bullies others
Uses physical force to dominate

Due to the large number of cross-loaded items resulting from the teacher factor analysis, further investigation of these items seemed warranted. The eight questions that were originally dropped were subsequently factor analyzed and a single factor emerged. These results are shown in Table 8. This factor was called emotion dysregulation because the items appear to describe behaviors that are internal to the

student and how they coped with negative emotions. The emotion dysregulation scale was constructed in the same manner as the other teacher aggression scales. The students' scores on these items were summed. The internal consistency for this scale was high ($\alpha=.896$) and was more similar than the other teacher aggression scales. Partial correlations were conducted to see whether the teacher aggression scales would be correlated after controlling for emotion dysregulation. The results, in Table 9, show that the teacher aggression scales are no longer correlated once emotion dysregulation is accounted for. The partial correlations observed in the current study are more closely in line with the negative correlations reported by Little et al (2003) when those researchers purposely separated form and function in their questionnaire items. The highest observed correlation among all the teacher rated aggression scales was between teacher reactive overt and teacher emotion dysregulation ($r=.80, p<.01$).

Table 8
Factor Loadings for cross loaded Teacher Aggression Items

Item	Factor Emotion Dysregulation
Says mean things when angry	.854
Gets angry easily	.828
Teases and name calls	.790
Repeats stories or talks negatively about others	.770
Uses physical force to dominate	.749
Responds negatively when fails	.704
Breaks rules in games	.677

Table 9

Partial correlations of teacher aggression, controlling for emotion dysregulation

	Reactive Relational	Reactive Overt	Pure Overt
Reactive Relational		-.303	-.331
Reactive Overt			.270
Pure Overt			

Table 10

Correlations Between Aggression Scales

	1	2	3	4	5	6	7
1. Teacher Reactive Relational		.29**	.20*	.55**	.13	.51**	.48**
2. Teacher Reactive Overt			.69**	.80**	.70**	.53**	.67**
3. Teacher Pure Overt				.72**	.64**	.45**	.56**
4. Teacher Emotion Dysregulation [^]					.65**	.57**	.67**
5. Peer Pure Overt						.57**	.77**
6. Peer Reactive Relational							.72**
7. Peer Pure Relational [^]							

*p<.05; **p<.01; [^]Cross loaded item scale

In order to investigate the relationship across informants of rating aggressive behavior, correlations between all of the peer and teacher aggression scales were conducted. Not surprisingly, the correlation between teacher and peer reactive relational aggression was substantial ($r=.55$, $p<.01$) as was the correlation between teacher and peer pure overt aggression ($r=.64$, $p<.01$). Both of these scales measured similar behaviors and intents, but from different reporter points of view. In fact, some of the items on the teacher and peer reactive relational aggression scales have identical wording. It is interesting to note that the teacher and peer scales for pure overt aggression were highly correlated despite the two scales containing different items.

Adjustment Variables

To assess student social-psychological adjustment, several measures were used to capture both negative and positive functioning. Table 11 displays the descriptive statistics for the negative adjustment variables and Table 12 shows the descriptive statistics for the positive adjustment variables.

Table 11
Descriptive Statistics of Negative Adjustment Variables

	Minimum	Maximum	Mean	SD
MASC t score	30	79	53.50	10.96
Male			53.73	10.61
Female			53.19	11.51
CDI t score	40	72	46.97	6.90
Male			45.55	5.34
Female			48.34	8.21
BASC Externalizing	40	71	44.89	6.10
Male			44.25	4.87
Female			45.72	7.39
BASC Internalizing	39	65	43.41	5.55
Male			42.59	5.57
Female			44.49	5.41
Teacher Reported Peer Problems (TRPP)	1.0	3.80	1.34	.43
Male			1.29	.36
Female			1.40	.51

Table 12
Descriptive Statistics of Positive Adjustment Variables

	Minimum	Maximum	Mean	SD
Peer Prosocial	00	12.25	3.86	2.24
Male			3.93	2.33
Female			3.77	2.13
Teacher Prosocial	1.5	4.75	3.30	.60
Male			3.32	.60
Female			3.26	.60
Peer Liking	1.4	2.76	2.24	.33
Male			2.76	.32
Female			2.20	.33

Correlations between the negative adjustment variables were conducted and are shown in Tables 13 and 14. Consistent with past research BASC Internalizing and

Externalizing scales were correlated ($r = .41, p < .01$). Additionally, the self-report measures of internalizing problems, the MASC and CDI, were correlated, though modestly ($r = .25, p < .05$). Across raters, teacher-reported BASC Internalizing and self-reported MASC were modestly correlated ($r = .21, p < .05$). Teacher-rated peer problems, a measure of peer rejection as viewed by the teacher, was moderately correlated with BASC Externalizing ($r = .23, p < .05$) and substantially correlated with BASC Internalizing ($r = .52, p < .05$). Previous research has found similar associations between peer rejection and concurrent externalizing problems (e.g., Cillessen & Mayeux, 2004) and internalizing problems (e.g., Morrow et al., 2006).

Table 13
Correlations between Negative Adjustment Variables

	1	2	3	4	5
1. MASC		.25*	.06	.21*	.003
2. CDI			.03	.13	.088
3. BASCE				.41**	.23*
4. BASCI					.52**
5. TRPP					

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

BASCE (BASC Externalizing), BASCI (BASC Internalizing), TRPP (Teacher reported peer problems scale)

As expected, all of the positive adjustment variables were correlated (see Table 14). Peer ratings of prosocial behavior substantially correlated with peer rated liking ($r = .523, p < .01$). Teacher rated prosocial behavior moderately correlated with peer rated prosocial behaviors ($r = .24, p < .05$) and suggested that teachers and peers agreed on those students who performed helpful acts for their classmates. Teacher rated prosocial behavior and peer rated liking were also moderately correlated ($r = .31, p < .01$). Taken together, these results indicated that students who engaged in prosocial behaviors were recognized by others for their good acts and were well-liked by their

peers. When teacher and peer rated prosocial behaviors were correlated with teacher rated peer problems (i.e., peer rejection), the results were significant ($r = -.22, p < .05$; $r = -.24, p < .05$ respectively). Those children who were rated as possessing prosocial behaviors were also rated as having less peer problems according to their teachers. These findings were consistent with past literature linking prosocial behaviors with peer liking (e.g., Crick, 1996).

Table 14
Correlations Between Positive Adjustment Variables

	1	2	3
1. Peer Prosocial		.24*	.53**
2. Teacher Prosocial			.312**
3. Peer Liking			

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

Three significant correlations emerged when positive and negative adjustment variables were tested (Table 15). Teacher rated prosocial behaviors were negatively associated with teacher rated BASC Externalizing Scale ($r = -.43, p < .01$), which indicated that teachers who viewed students as prosocial were less likely to view those students as experiencing externalizing problems. Peer liking was also negatively correlated with both teacher rated BASC Internalizing and Externalizing scales ($r = -.32, p < .05$; $r = -.25, p < .05$ respectively). However, none of the self-rated negative adjustment measures were correlated with the positive adjustment measures. Similar to the lack of correlations between the self-rated and other rated negative adjustment measures (except for teacher rated externalizing problems), it appears as though teachers and peers agreed on their perceptions of behavior and differed from the ratings by the students themselves.

Spearman correlations were derived for the relationships between gender and both positive and negative adjustment variables. There were only two significant findings. Girls rated themselves higher for depression, as measured by the CDI ($r=.201, p<.05$) and girls were rated higher for internalizing problems by the teachers, as measured by the BASC Internalizing scale ($r=.242, p<.05$). No other gender associations were observed with respect to the adjustment variables. Further gender analyses will be discussed in the section below.

Table 15

Correlations between All Adjustment Variables (positive and negative)

	Peer Pros	Teach Pros	Peer Liking
MASC	.10	.04	-.05
CDI	-.06	.05	-.06
BASCE	-.15	-.43**	-.25*
BASCI	-.17	-.14	-.32**
TRPP	-.24*	-.22*	-.40**

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

Research Question #1

What are the associations between the different types of aggression and social-psychological adjustment variables?

In order to answer the first research question regarding the associations between the different types of aggression and positive and negative adjustment variables, Pearson correlations were analyzed. The results are presented in Table 16. Teacher rated pure overt aggression was moderately correlated with teacher rated BASC Externalizing Scale ($r=.28, p<.01$). This confirms the hypothesis that any form or function of aggression would be associated with externalizing problems

because the constructs overlap. Teacher rated emotional dysregulation was also moderately correlated with the BASC Externalizing scale ($r=.21, p<.05$).

Peer rated reactive relational aggression was associated with higher self-reported depression ($r=.22, p<.05$). This finding is consistent with research that has found a relationship between both relational and reactive aggression and depression symptoms (e.g., Card & Little, 2006; Crick, Ostrov, & Werner, 2006; Vitaro et al., 2002). Although not significant, peer rated reactive relational aggression and self-rated anxiety symptoms were also moderately correlated ($r= .20$). This relationship is supported by past investigations that found an association between aggression and anxiety, specifically with self-rated aggression and anxiety (Marsee et al., 2008).

There were no other significant correlations between types of aggression (teacher or peer rated) and negative adjustment variables.

Table 16
Correlations between Aggression and Negative Adjustment

	MASC	CDI	BASCE	BASCI	TRPP
TRR	.08	.17	.00	.05	.09
TRO	.03	.02	.19	.07	-.03
TPO	-.11	.08	.28**	.02	-.02
TED [^]	.00	.11	.21*	.11	-.04
PPO	-.03	-.05	.02	.02	-.11
PRR	.20	.22*	.12	.05	.02
PPR [^]	.09	.09	.11	.13	-.00

* $p<.05$; ** $p<.01$; [^]Cross loaded item scale; TRR (Teacher Reactive Relational), TRO (Teacher Reactive Overt), TPO (Teacher Pure Overt), TED (Teacher Emotional Dysregulation), PPO (Peer Pure Overt), PRR (Peer Reactive Relational), PPR (Peer Pure Relational)

Contrary to previous research (e.g., Card & Little, 2006), there were no significant correlations between any of the types of aggression and the positive adjustment variables. This was surprising given that the positive adjustment variables

were measured using existing scales. Perhaps the relationship between prosocial behaviors and aggression is more complex when aggression is broken down into form and function.

In summary, for this sample, only three significant associations were observed between aggression and adjustment. All of these relationships were in the moderate positive direction. Teacher rated externalizing behavior correlated with both teacher pure overt and teacher emotional dysregulation, whereas peer reactive relational correlated with self-rated depression. The correlation between peer reactive relational aggression and self-rated anxiety approached significance. It appears as though there were some unique associations between the various aggression scales and emotional correlates.

Research Question #2

What is the unique contribution of each type of aggression when predicting social-psychological adjustment outcomes?

Part A. Within Informant: To further support existing literature, this study looked at the question of relationships separately for teachers and peers.

A series of hierarchical regression analyses were conducted with the aggression scales as predictor variables and adjustment as the criterion variable. Separate analyses for each informant were conducted in order to account for the correlation among the aggression scales and obtain the unique contributions of each aggression type. There is precedence for this method in the research (e.g., Marsee,

Weems, & Taylor, 2008). Separate analyses for each adjustment variable were conducted. Four separate regressions were run to allow permutations in which each of the scales was entered last. In the first regression for the teacher scales, the two overt scales were added at step 1 and the reactive relational scale was added at step 2. In the second regression, the two reactive scales were added at step 1 and the pure overt scale was added at step 2. In the third regression, the reactive relational and the pure overt scale were added at step 1 and the reactive overt scale was added at step 2. Finally, for the fourth regression, the reactive relational, reactive overt and pure overt scales were added at step 1 and the teacher rated emotion dysregulation scale was added at step 2.

Three hierarchical regression analyses were conducted with the peer aggression scales as predictor variables and the various adjustment measures as the criterion variable. Again, so each could be entered last, in the first regression, the two peer relational scales, reactive relational and pure relational, were added at step 1 and the peer pure overt aggression scale was added at step 2. In the second regression, the two pure forms of peer aggression, relational and overt, were added at step 1 and peer reactive relational aggression was added at step 2. In the third regression, pure overt and reactive relational aggression, were added at step 1 and pure relational aggression was added at step 2. The results from all the regression analyses are presented below.

Negative Social Adjustment

Teacher rated adjustment

BASC Externalizing. The first adjustment variable to be investigated was externalizing behavior, as measured by teacher ratings using the BASC externalizing

scale. The results of step 2, after controlling for the other types of aggression, are summarized in Table 17 for teacher aggression scales and Table 18 for peer aggression scales. For teacher ratings, the first regression indicated that reactive relational aggression was not a significant predictor of BASC externalizing scores controlling for both reactive and pure overt aggression ($\beta = -.100$, $p = n.s.$). The second regression indicated that teacher pure overt aggression was a significant predictor of BASC externalizing scores controlling for both reactive relational and reactive overt aggression ($\beta = .286$, $p < .05$). In the third regression, reactive overt aggression was not a significant predictor of BASC externalizing scores controlling for reactive relational and pure overt aggression ($\beta = .031$, $p = n.s.$). In the fourth regression, teacher rated emotion dysregulation was not a significant predictor of BASC externalizing scores controlling for reactive relational, reactive overt, and pure overt aggression ($\beta = .263$, $p = n.s.$).

The first regression using the peer rated aggression scales indicated that peer pure overt aggression was not a significant predictor of BASC externalizing scores controlling for both reactive relational and pure relational aggression ($\beta = -.123$, $p = n.s.$). The second regression indicated that reactive relational aggression was not a significant predictor of BASC externalizing scores controlling for pure relational and pure overt aggression ($\beta = .096$, $p = n.s.$). The third regression showed that pure relational aggression was not a significant predictor of BASC externalizing scores controlling for pure overt and reactive relational aggression ($\beta = .131$, $p = n.s.$).

In summary, the only type of aggression that significantly predicted teacher rated externalizing behaviors after controlling for all other types of teacher rated

aggression, was teacher pure overt. No peer rated types of aggression significantly predicted teacher rated externalizing behavior.

Table 17

Hierarchical regression analyses examining the unique associations of teacher aggression scales with BASC externalizing

Step		R2	R2Δ	β	t	p
2	TreRel	.084	.009	-.100	-.916	.362
2	TpuOv	.084	.043	.286	2.048	.044*
2	TreOv	.084	.000	.031	.220	.826
2	TEDys	.098	.014	.263	1.164	.247

Note: * $p < .05$; TreOv (Teacher Reactive Overt), TpuOv (Teacher Pure Overt), TreRel (Teacher Reactive Relational), TEDys (Teacher Emotion Dysregulation)

Table 18

Hierarchical regression analyses examining the unique associations of peer aggression scales with BASC externalizing

Step		R2	R2Δ	β	t	p
2	PpuOv	.024	.008	-.123	-.839	.404
2	PreRel	.024	.005	.096	.670	.505
2	PpuRel	.024	.007	.131	.766	.445

Note: PreRel (Peer Reactive Relational), PpuRel (Peer Pure Relational), PpuOv (Peer Pure Overt)

The same regression process was repeated for the remaining social-psychological adjustment variables and the findings are summarized below. Only the significant results are presented. All non-significant findings may be found in Appendix A.

BASC internalizing. No types of teacher or peer aggression were found to be significant predictors of BASC internalizing scores when controlling for all combinations of aggression scales.

Teacher rated peer rejection. No types of teacher or peer aggression were found to be significant predictors of teacher rated peer rejection scores when controlling for all combinations of aggression scales.

Self-rated adjustment

CDI. No types of teacher rated aggression were found to be significant predictors of *CDI* scores when controlling for all combination of teacher rated aggression scales.

There were significant findings for two of the peer rated aggression scales. Table 19 summarizes the results from the hierarchical regressions examining the unique associations of the peer aggression scales with *CDI* scores. The first regression using the peer rated aggression scales indicated that peer pure overt aggression was a significant predictor of *CDI* scores controlling for both reactive relational and pure relational aggression ($\beta = -.318, p = .046$). The second regression indicated that reactive relational aggression was also a significant predictor of *CDI* scores controlling for pure relational and pure overt aggression ($\beta = .346, p = .020$). The third regression showed that pure relational aggression was not a significant predictor of *CDI* scores controlling for pure overt and reactive relational aggression ($\beta = .084, p = n.s.$).

Table 19
Hierarchical regression analyses examining the unique associations of peer aggression scales with *CDI*

Step		R ²	R ² Δ	β	t	p
2	PpuOv	.100	.042	-.318	2.020	.046*
2	PreRel	.100	.057	.346	2.368	.020*
2	PpuRel	.100	.002	.084	.457	.649

Note: * $p < .05$

MASC. No types of teacher rated aggression were found to be significant predictors of *MASC* scores when controlling for all combination of teacher rated aggression scales.

There were significant findings for one of the peer rated aggression scales. Table 20 summarizes the results from the hierarchical regressions examining the unique associations of the peer aggression scales with MASC scores. The first regression using the peer rated aggression scales indicated that peer pure overt aggression was not a significant predictor of MASC scores controlling for both reactive relational and pure relational aggression ($\beta = -.255$, $p = n.s.$). The second regression indicated that reactive relational aggression was a significant predictor of MASC scores controlling for pure relational and pure overt aggression ($\beta = .307$, $p = .041$). The third regression showed that pure relational aggression was not a significant predictor of MASC scores controlling for pure overt and reactive relational aggression ($\beta = .061$, $p = n.s.$).

Table 20
Hierarchical regression analyses examining the unique associations of peer aggression scales with MASC

Step		R ²	R ² Δ	β	t	p
2	PpuOv	.075	.027	-.255	-1.597	.114
2	PreRel	.075	.045	.307	2.076	.041*
2	PpuRel	.075	.001	.061	.330	.303

Note: * $p < .05$

In summary, peer rated reactive relational aggression significantly predicted self rated depression and anxiety, while controlling for all other types of peer rated aggression. This finding is in line with previous studies that have found indirect aggression to be related to internalizing problems (Card et al., 2008) and specifically self-rated reactive relational aggression to be related to anxiety disorders (Marsee et al., 2008). Interestingly, this study also found that peer-rated pure overt aggression significantly predicted lower self-rated depression scores. Negative associations

between overt aggression and depression have not been explicitly reported before in the literature.

Positive Social Adjustment

Teacher Rated Prosocial Behaviors. No types of teacher or peer aggression were found to be significant predictors of teacher rated prosocial behaviors when controlling for all combinations of aggression scales.

Peer Rated Prosocial Behaviors. No types of teacher aggression were found to be significant predictors of peer rated prosocial behaviors when controlling for all combinations of teacher aggression scales.

There were significant findings for one of the peer rated aggression scales. Table 21 summarizes the results from the hierarchical regressions examining the unique associations of the peer aggression scales with peer rated prosocial scores. The first regression using the peer rated aggression scales indicated that peer pure overt aggression was a significant predictor of peer rated prosocial behaviors above and beyond for both reactive relational and pure relational aggression ($\beta = -.255$, $p = .030$). The second regression indicated that reactive relational aggression was not a significant predictor of peer rated prosocial scores controlling for pure relational and pure overt aggression ($\beta = .158$, $p = n.s.$). The third regression showed that pure relational aggression was not a significant predictor of prosocial scores controlling for pure overt and reactive relational aggression ($\beta = .052$, $p = n.s.$).

Table 21
Hierarchical regression analyses examining the unique associations of peer aggression scales with peer-rated prosocial behaviors

Step		R2	R2Δ	β	t	p
2	PpuOv	.053	.039	-.308	-1.906	.030*
2	PreRel	.053	.012	.158	1.058	.293
2	PpuRel	.053	.001	.052	.274	.785

Note: * $p < .05$

Peer Acceptance. No types of aggression were found to be significant predictors of peer liking scores when controlling for all combinations of aggression scales.

Overall, with the exception of peer pure overt, no types of aggression, teacher or peer rated, significantly predicted positive adjustment outcomes. However, peer rated pure overt aggression negatively predicted peer rated prosocial behaviors after controlling for the other types of peer rated aggression, suggesting that students who were rated as purely overtly aggressive by their peers, predicted lower prosocial scores (less prosocial), as rated by those same peers.

Part B. Across informant: *Due to frequent disagreement between informants, this study examined whether one informant contributed more than the others in terms of predicting adjustment outcomes.*

In this study, very few associations were found between informants when rating aggressive and adjustment behaviors, as shown in Table 17. Moreover, there were no instances of an adjustment variable correlating with aggression ratings of more than one informant. As such, Part B of the second research question was dropped from further analyses and the implication of informant discrepancies are discussed in the proceeding chapter.

Research Question #3

What role, if any, does gender play?

Part A. Are there observed gender differences among the different types of aggression?

Several studies have noted gender differences in the measurement of aggressive behavior (i.e., Archer, 2004). In order to investigate any gender differences, first nonparametric Spearman correlations were conducted to investigate the association between gender and the aggression measures. Gender was coded “1” for boys and “2” for girls, therefore positive correlations show associations with girls show and negative correlations show associations with boys. Consistent with previous findings, the results (Table 22) displayed a moderate correlation between teacher reactive relational aggression and showed that girls were rated higher than boys ($r=.286, p<.01$). Moderate correlations were also observed between teacher and peer ratings of Pure Overt aggression with boys scoring higher ($r=-.210, p<.05$; $r=-.206, p<.05$ respectively). No other gender correlations were observed.

A Multivariate Analysis of Variance (MANOVA) was conducted and revealed significant main effects for Gender [$F(6, 92)=4.721, p<.001$]. The teacher rated and peer rated aggression scales were used as dependent variables. Follow up univariate analyses confirmed that girls were perceived by their teachers as more reactive relationally aggressive than boys [$F(1, 99)=12.02, p=.001$] and that boys were perceived by their teachers as more pure overtly aggressive than girls [$F(1, 99)=4.31, p=.033$]. There was no significant difference between teachers' perception of boys and girls reactive overt aggressive behavior or teachers' perception of emotion dysregulation. The univariate analyses also confirmed that

boys are perceived by their peers as more pure overtly aggressive than girls [F(1,99)=5.49, p= .021], but there was no observed gender difference in peer perception of relational aggression with respect to either reactive or pure function. Table 23 shows the means and standard deviations of the aggression scales by gender.

Table 22
Correlations between gender and aggression

	<u>Gender</u>
Teacher Reactive Relational	.286**
Teacher Reactive Overt	-.183
Teacher Pure Overt	-.210*
Teacher Emotion Dysregulation [^]	-.011
Peer Pure Overt	-.206*
Peer Reactive Relational	.043
Peer Pure Relational [^]	-.047

*p<.05; **p<.01; [^]Cross loaded item scale

Table 23
Descriptive Statistics of Aggression Scales

	<u>Minimum</u>	<u>Maximum</u>	<u>Mean</u>	<u>SD</u>
Teacher Reactive Relational				
Male	1.00	2.80	1.183	.370
Female	1.00	3.80	1.462	.645
Teacher Reactive Overt				
Male	1.00	4.50	1.815	.868
Female	1.00	3.00	1.387	.571
Teacher Pure Overt				
Male	1.00	3.33	1.264	.540
Female	1.00	2.67	1.127	.345
Teacher Emotion Dys				
Male	1.00	3.50	1.405	.570
Female	1.00	2.50	1.361	.471
Peer Pure Overt				
Male	.00	13.0	.750	1.779
Female	.00	5.33	.775	1.175
Peer Reactive Relational				
Male	.00	6.67	1.500	1.293
Female	.00	4.67	1.892	1.288
Peer Pure Relational				
Male	.00	33.0	4.393	5.456

Female	.00	21.0	4.837	4.720
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Part B. Does gender moderate any of the associations between aggression and adjustment?

A series of hierarchical regression analyses were conducted to determine whether aggression interacted with gender in predicting the various adjustment measures. For each of the seven adjustment variables, all teacher and peer aggression scales were analyzed, giving a total of 49 regressions conducted. For each adjustment variable, each type of aggression was entered individually, along with gender in the first step as predictors. The interaction term of aggression by gender was entered at step 2. Table 24 shows the significant interaction effects by negative adjustment variable.

Table 24
Hierarchical regression analyses examining the interaction effect of teacher aggression and gender on negative adjustment variables

Step		R ²	R ² Δ	β	t	p
BASCE						
1	TpuOv	.093	.093	.269	2.915	.044
	Gender			.136	1.339	.184
2	TpuOvXgender	.148	.054	.726	2.379	.020*
CDI						
1	TEDys	.067	.067	.109	1.071	.287
	Gender			.234	2.295	.024
2	TEDysXgender	.109	.042	.620	2.040	.044*
MASC						
1	TreOv	.001	.001	.029	.267	.790
	Gender			.004	.033	.973
2	TreOvXgender	.054	.054	.716	2.248	.027*

*p<.05

The results indicated that teacher rated pure overt aggression interacted with gender to predict teacher rated BASC externalizing scores as shown by the significant change in R² (R²Δ = .054, β= .726, p= .020). This suggests that gender moderated the

relationship between pure overt aggression and BASC externalizing behaviors. Teacher rated aggression interacted with gender to predict both self-rated negative adjustment measures. The interaction term for gender by emotion dysregulation entered at step 2 resulted in a significant change in R^2 ($R^2\Delta = .042$, $\beta = .62$, $p = .044$) indicating that gender moderated the relation between self-reported depression and emotion dysregulation. The interaction term for gender by teacher rated reactive overt aggression entered at step 2 also resulted in a significant change in R^2 ($R^2\Delta = .054$, $\beta = .716$, $p = .027$) suggesting that gender moderated the relation between self-reported anxiety and reactive overt aggression. There were no other significant interactions between aggression types and negative adjustment variables by gender.

Figures 1-6 display the significant interaction effects.

Figure 1

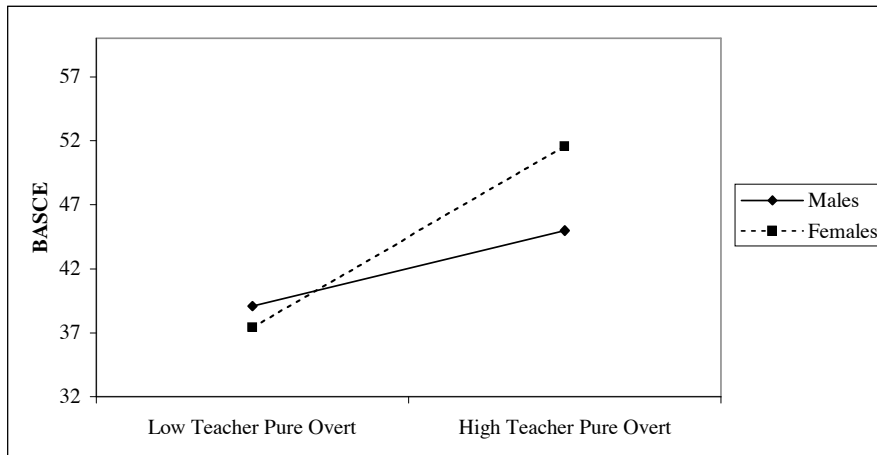


Figure 1 displays the findings by low and high levels of teacher rated pure overt aggression (mean split) and gender, and shows that girls with high levels of teacher rated pure overt aggression had the highest levels of teacher rated BASC Externalizing scores. A 2 x 2 (Gender x Aggression) between subject factorial

ANOVA was conducted on BASCE scores. There was a main effect for gender, $F(1, 89) = 4.754, p = .032$. Females ($M = 45.56, SD = 7.43$) had overall higher BASCE scores than males ($M = 44.49, SD = 5.025$). There was a significant main effect for aggression group, $F(1, 89) = 9.638, p = .003$. The high aggression group ($M = 48, SD = 8.682$) had overall higher BASCE scores than the low aggressions group ($M = 44.164, SD = 5.13$). There was also a significant interaction between gender and group, $F(1, 89) = 4.266, p = .042$. High aggression females ($M = 52.29, SD = 11.06$) had higher BASCE scores than high aggressive boys ($M = 45.69, SD = 6.46$). Simple slope calculations reveal that the difference between low and high pure overt aggression scores and externalizing scores are significant for girls (slope = 7.246; $t(96) = 7.864, p < .0001$), but not for boys.

Figure 2

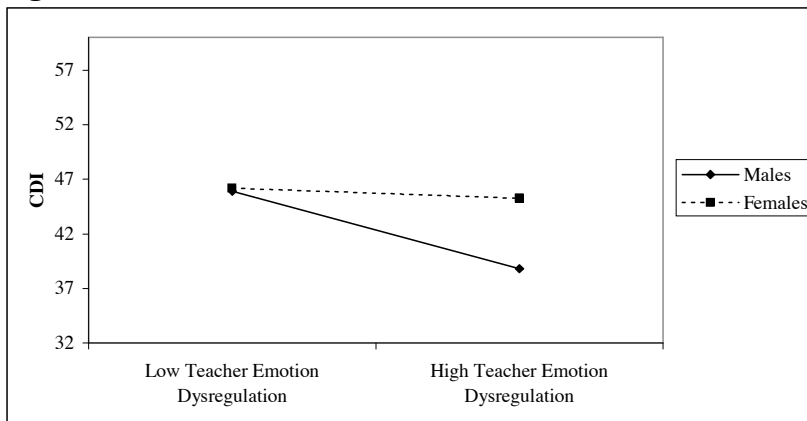


Figure 2 depicts findings by low and high levels of teacher rated emotion dysregulation (mean split) and gender, and interestingly shows that males with high levels of emotion dysregulation had the lower CDI scores. There was a significant main effect for gender $F(1, 89) = 6.56, p = .012$. Males reported less depressive symptoms ($M = 45.75, SD = 5.49$) than females ($M = 49.024, SD = 8.19$). According

to the ANOVA results, there was not a significant main effect for aggression group, nor was a significant interaction present. In addition, neither slope for girls or boys was found to be significant. It should also be noted that all CDI scores were in the normative range.

Figure 3

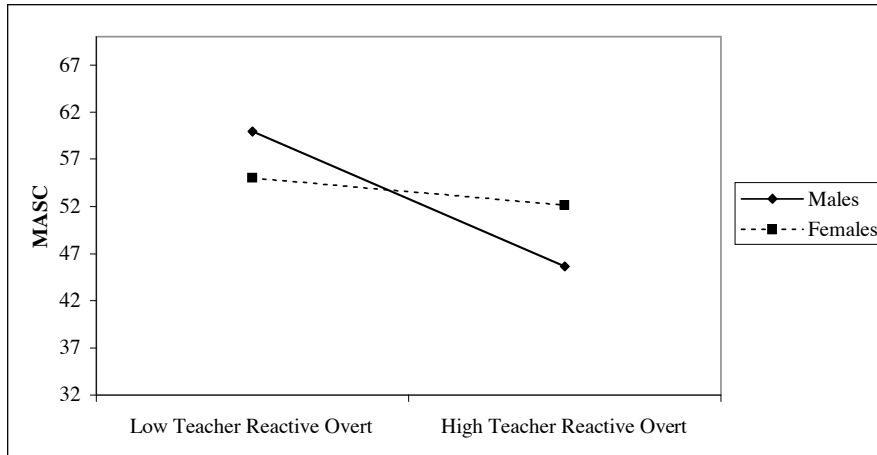


Figure 3 shows the interaction between teacher rated reactive overt aggression and self-rated anxiety symptoms (MASC scores) and that males with low levels of teacher reactive overt aggression have the highest MASC scores. The results of the 2 x 2 between subject factorial ANOVA indicate there was a significant interaction effect $F(1, 89) = 3.83, p = .05$. Low aggressive females reported fewer anxiety symptoms ($M = 51.56, SD = 11.24$) than low aggressive males ($M = 54.38, SD = 11.06$), whereas high aggressive males reported fewer anxiety symptoms ($M = 51.95, SD = 8.98$) than highly aggressive females ($M = 58.80, SD = 11.68$). Simple slope calculations reveal that the difference in MASC scores were significant for boys but not for girls (slope = $-7.347; t(96) = -2.027, p = .04$).

The same gender analyses were conducted using positive adjustment as the outcome variable. The results displayed in Table 30 indicate that teacher rated

emotional dysregulation interacted with gender to predict two positive adjustment outcomes, peer liking and peer rated prosocial behavior, as shown by the significant change in R^2 (; $R^2\Delta = .046$, $\beta = .650$, $p = .040$, respectively). The results also indicate that the interaction between peer pure relational aggression and gender significantly predicted peer-liking scores ($R^2\Delta = .059$, $\beta = .736$, $p = .019$).

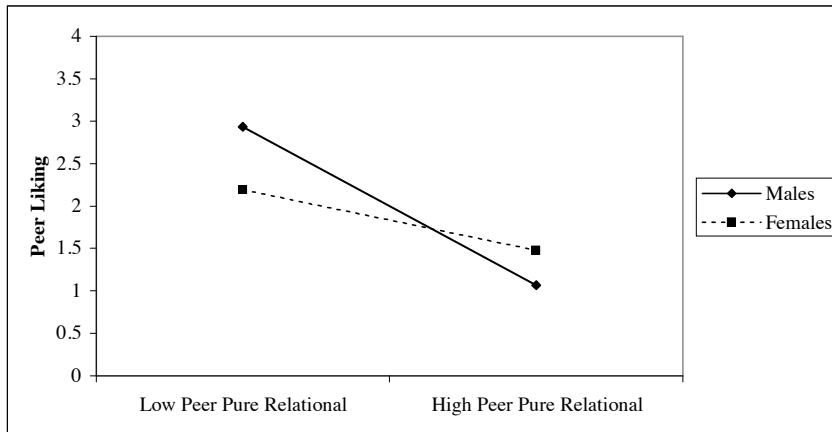
Table 30
Hierarchical regression analyses examining the interaction effect of teacher aggression and gender on positive adjustment variables

Step		R ²	R ² Δ	β	t	p
Peer Liking						
1	TEDys	.012	.012	-.063	-.602	.549
	Gender			-.091	-.872	.385
2	TEDysXgender	.063	.051	.683	2.191	.031*
Peer Prosocial						
1	PpuRel	.020	.020	-.114	-1.083	.282
	Gender			-.088	-.841	.402
2	PpuRelXgender	.079	.059	.736	2.379	.019*
1	TEDys	.011	.011	-.100	-.954	.343
	Gender			-.032	-.301	.764
2	TEDysXgender	.057	.046	.650	2.079	.040*

* $p < .05$

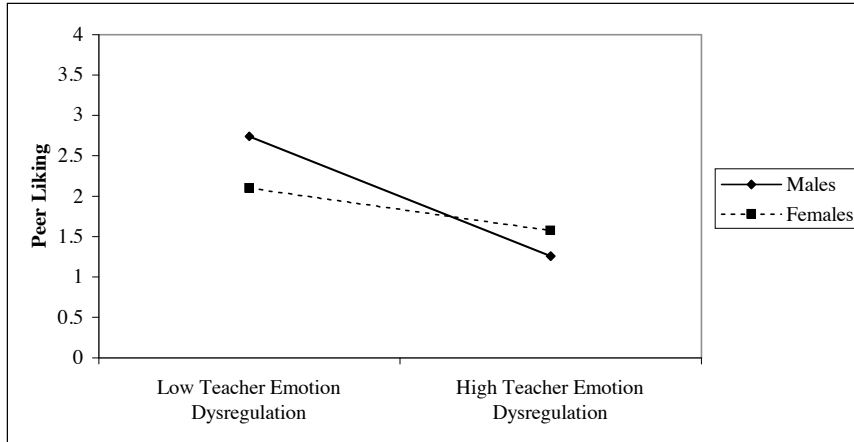
Figure 4 depicts the suggested gender moderation findings by low and high peer rated pure relational aggression (mean split), and gender, and shows that males with high levels of aggression had the lowest peer liking scores (i.e., liked the least). Interestingly, there were no significant main effects or interaction after a 2 x 2 between subject factorial ANOVA was conducted. However, simple slope calculations revealed that the difference in peer liking scores from low to high peer pure relational aggression are significant for both boys (slope = $-.959$; $t(96) = -2.61$, $p = .011$) and girls (slope = $-.366$; $t(96) = -2.314$, $p = .023$).

Figure 4



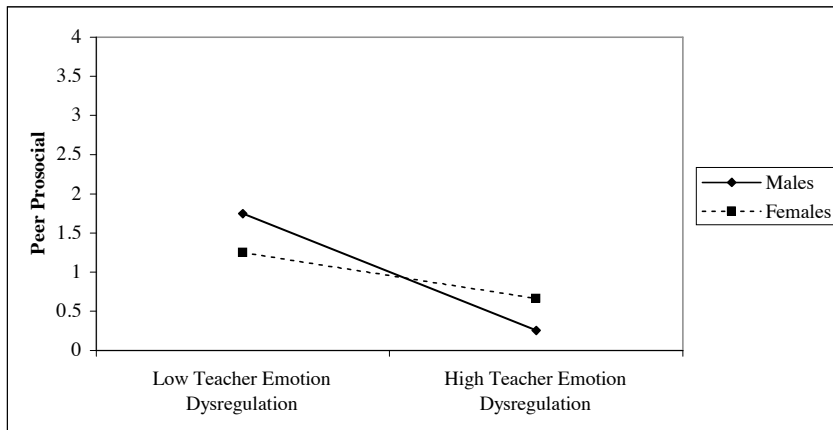
A similar graphical depiction was observed for the interaction between emotion dysregulation and peer liking scores (see Figure 5). Boys with low levels of emotion dysregulation had the highest peer liking scores, whereas boys with high levels of emotion dysregulation had the lowest peer liking scores. There was a significant interaction between gender and aggression group $F(1, 89) = 6.24, p = .014$. Highly aggressive males were liked less by their peers ($M = -.328, SD = 1.212$) than highly aggressive females ($M = .235, SD = .991$), whereas low aggressive males were more liked by their peers ($M = .213, SD = .801$) than low aggressive females ($M = -.310, SD = 1.016$). Slope analysis revealed that the slope for boys was significant (slope = $-.762; t(96) = -2.267, p = .026$), while the slope for girls was not significant.

Figure 5



Finally, Figure 6 shows the findings by low and high levels of emotion dysregulation (mean split), and gender, and shows that males with low emotion dysregulation had the highest peer prosocial scores and males with high emotion dysregulation had the lowest peer prosocial scores. There was a significant interaction between gender and aggression group $F(1, 89) = 4.583, p = .031$. Highly aggressive males were rated less prosocial by their peers ($M = -.346, SD = .790$) than highly aggressive girls ($M = .251, SD = 1.12$) and low aggressive males were rated as more prosocial by their peers ($M = .141, SD = 1.213$) than low aggressive girls ($M = -.224, SD = .773$). Simple slope calculations indicate that both boys and girls slopes were significant (slope = $-.767; t(96) = -2.282, p = .025$; slope = $-.300; t(96) = -2.070, p = .041$ respectively).

Figure 6



Chapter 5: Discussion

The purpose of this study was to examine widely used aggression measures and to investigate their factor structure as well as their patterns of social-adjustment correlates and gender differences. This research aimed to critically evaluate the utility of existing measures and extend previous work that is beginning to distinguish between the different forms and functions of aggressive behavior. Overall, this study provides important information regarding previously used aggression measures and supports the more recent approach to the study of aggressive behavior in children by taking form and function into account when explaining aggressive behavior and concurrent social-adjustment issues. There are three parts to this study. The first part is scale construction, using principal component analysis of existing scales of aggression. The second part examines the pattern of co-occurrence of both negative and positive social-adjustment variables with aggression. Finally, the third part of the study considers gender differences among the types of aggression, as well as any potential moderating role gender played in the links between aggression and adjustment.

Construct of Aggression

Peer aggression scales construction. The results from the principal component analyses used in this paper do not parallel previous findings by Crick (1997) or others (e.g., Roach & Gross, 2003) who found evidence of a two-factor model using the same items. Crick asked 9 to 12 year olds to nominate their peers using the same relational and overt statements and found in a factor analysis (Varimax rotation) that there were two distinct factors with loadings ranging from .70

to .90 and all cross loadings were below .43. In the current study, two clear factors emerged, albeit containing only three items each. There were many items that cross loaded onto the factors therefore a third scale was created, which included these items.

It is important to note the breakdown of the two main factors. The first, peer pure overt, included items from Crick's (1997) Overt Aggression scale that involved physical acts of aggression ("Kids who hit") or threat with physical acts ("Tell others they will beat them up"). The second factor, peer reactive relational, included items from Crick's Relational Aggression scale and was comprised of items that state indirect aggressive acts when kids were angry. Interestingly, the relational items that included an emotional component were statistically separated from indirect aggressive acts that had no stated emotion or intent. The third and final factor comprised of the cross loaded items and was categorized as peer pure relational aggression. These items included verbal direct and indirect actions taken against another person but with no stated intention. Take for example, "Kids who call others names" Crick (1996 & 1997). This item labeled direct verbal actions as overt aggression. On the other hand, Little et al (2003) labeled these acts as "pure" relational in nature. Because the present study was interested in how pre-established instruments would potentially hold up or breakdown into the different form and function properties, it was important to follow Little et al's guidelines when creating new scales by attempting to assess the pure forms as well as the reactive and proactive functions of both overt and relational aggression.

Teacher aggression scales construction. For the teacher ratings, three factors were extracted from the factor analysis and resulted in the following scales: reactive relational, reactive overt, and pure overt. These results varied from previous studies that found distinctive two-factor solutions using the original reactive and proactive scale (Day, Bream, & Pal, 1992; Dodge & Coie, 1987; Poulin & Boivin, 2000). These referenced studies utilized samples of males only and the inclusion of females in this sample may account for the different patterns. Larger samples are needed to study potential gender differences in factor structure in teacher rated aggression. The existence of two reactive factors has been demonstrated in past research. For example, Roach and Gross (2003) found double loadings for the reactive aggression items using Dodge and Coie's original scale for teachers, even when they forced a two-factor solution. It would appear from prior investigations, as well as this one, that reactive aggression may be difficult to assess as a single construct and appears to be linked to self-regulation difficulties and anger.

This study found that emotional dysregulation was an underlying factor in the teachers' perceptions of the students' aggressive behavior. Similar to the peer aggression scales, there were many cross loaded teacher aggression items that were grouped together to create a fourth teacher scale called emotion dysregulation. The items that comprised this scale either explicitly stated anger or a general negative emotion as the intent behind the performed action. Specifically, the emotion dysregulation scale included items from Dodge and Coie's (1987) Reactive/Proactive Scale, as well as items from Crick's (1997) Relational Scale that mention anger in the items. Recent research has begun to focus on the emotional correlates of aggressive

behavior and has found that reactive and proactive aggression tend to correspond to different emotions (i.e., Marsee & Frick, 2007). The findings analyzed here regarding the role of the emotional dysregulation scale have added to the growing body of literature that explores emotional correlates to aggressive behavior. It has been documented that children who have difficulties regulating their emotions are more likely to engage in physically aggressive behaviors with peers (see Eisenberg & Fabes, 1999, for a review). Other investigations have found specifically that reactive aggression is associated with poorly regulated emotion and anger (Marsee & Frick, 2007; Vitaro et al. 2002). In fact, using the same data set, an earlier study found a correlation between self-reported anger and teacher rated reactive and proactive aggression, using Dodge & Coie's original Reactive/Proactive scale (Potter, 2007).

The emotional dysregulation scale in this study was highly correlated with both teacher and peer rated aggression scales, irrespective of form, or function. This suggests that a student rated by the teacher as being more emotionally dysregulated was also rated as more aggressive by the same teacher as well as by peers. Importantly, once emotional dysregulation was controlled for, the correlations between reactive and pure forms of aggression were no longer significant. This finding is consistent with previous investigations that distinguish between form and function and have found little correlation between different types of aggression (Little et al., 2003; Polman et al., 2007). In fact, negative correlations were observed between reactive overt and reactive relational aggression as measured by teacher reports, which suggests that once the underlying emotional component is controlled for, there was no association between forms of aggressive behavior.

The construct of emotion regulation has gained much attention throughout the developmental literature. Emotion regulation is broadly defined as intrinsic and extrinsic processes that serve to monitor, evaluate, and modify emotional reactions (Thompson, 1994). This type of regulation often includes the regulation of attention, cognition, and emotional-relevant internal states and processes (Eisenberg, N., Guthrie, I. K., Fabes, R. A., Shepard, S. A., Losoya, S. H., Murphy, B. C., et al., 2000). Children high in anger, frustration, and hostility tend to exhibit externalizing difficulties (Eisenberg et al., 2001). Researchers have also demonstrated links between “difficult” temperament and concurrent and the prediction of future aggressive behavior (e.g., Bates, Pettit, Dodge, & Ridge, 1998). The emotion dysregulation scale in the present study appears to tap into some of the components of emotion regulation. For example the item, “Gets angry easily” refers to the idea that high frustration and anger are associated with aggressive behavior. Emotion dysregulation may also be differentially related to the functions of aggression. For instance, reactive aggression seems to be more strongly associated with a temperamental propensity for angry reactivity than proactive aggression, which is typically displayed to achieve a goal (Hubbard et al., 2002; Shields & Cicchetti, 1998).

It is important to discuss the construct of aggression within the context of the individual versus the environment. Researchers who examine the development of aggression have focused on three main areas. The first are the forces internal to the child, such as gender and temperament. The second are socialization processes that emerge within a child’s social interactions and relationships (e.g., peer interactions,

parenting styles). The final area involves of other external forces, such as socioeconomic status and family structure. The measures used in the present study imply that aggression is fully explained as a function of the individual. However, aggression can also be viewed as a dyadic, interactive construct. In fact, some have argued aggression should be understood in terms of both participating individuals who are acting in a specific context (Coie et al., 1999). For example, Coie et al (1999) found that relational factors account for at least as much variance in boy's aggressive interactions as either actor or target characteristics. The measures in this study do not address aggression as a dyadic construct but identify individuals who engage in such interactions at higher levels of frequency. Dodge et al (1990) found that reactive aggression, which is defined by the presence of anger, occurred more often in mutually aggressive dyads than in dyads with only one aggressive member.

Form and function of aggression. Overall, the results obtained from this study support integrative categories of aggression using teacher and peer reports, which greatly add to the integrative approach of categorizing aggressive behavior. Both teachers and peers distinguished between relational and overt aggression, however, teachers distinguished between pure and reactive overt aggression factors, whereas peers distinguished between pure and reactive relational aggression factors. Teacher ratings in the past have been correlated with peer ratings of relational aggression for girls and overt aggression in boys (McEvoy, Estrem, Rodriquez, & Olson, 2003). Teachers may be more likely to respond to acts of overtly aggressive behavior because they witness the behavior. Teachers also may be less likely to see relational aggression than peers due to its more covert nature, and only when the relationally

aggressive act is coupled with an emotional component, will teachers report the behavior.

The fact that both teachers and peers were able to differentiate between reactive relational aggression and pure overt forms of aggressive behavior is of note and suggests that proposed functions of behavior can be observed by others and are not only accessible to the person performing the act. Originally, Little et al (2003) used a self-report measure to create their form and function aggression scales and demonstrated little correlation between the scales once form and function were separated. Since Little et al's study, others have begun to use different reporters to rate aggressive behavior and have obtained similar results (e.g., Ostrov & Crick, 2007). Many of these recent studies have begun to look at alternative means to rate aggressive behavior beyond questionnaires. Observational methods have historically been able to distinguish between reactive and proactive aggression with low correlation between the two reactive and proactive functions (Ostrov & Crick, 2007; Price & Dodge, 1989).

Most recently, Polman et al (2007) showed in their meta-analysis of the distinction between reactive and proactive aggression in children and adolescents that observational studies produced the lowest correlations between the functions of aggression ($r = .05$) and the authors suggested that their findings offered support to use behavioral observations in studies investigating reactive and proactive aggression. However, caution is warranted when interpreting this finding due to the low number of studies that employ observational methods and that only one study directly compared questionnaire and observations of the same participants. Observational

studies can be time consuming and require a small sample size. It could be argued that in the investigation being considered here, teachers and peers are real-world observers, and may be capable of making the distinction between the reactive and pure functions, especially when they witness the antecedents and consequences of one's behavior. Depending on the measure being used, questionnaire studies have shown a wide range of correlations between reactive and proactive aggression (e.g., Little et al. 2003, $r = .18$; Prinstein & Cillessen, 2003, $r = .85$).

Some have acknowledged that reactive and proactive aggression are distinct behaviors, but they also recognize that some individuals may engage in both functions (Polman et al., 2007). Past research has suggested that children who display high levels of proactive aggression also have shown high levels of reactive aggression, and that there are a significant number of children who only display reactive aggression (Brown et al., 1996; Dodge & Coie, 1987). However, in the study discussed here, neither teachers nor peers endorsed the proactive (or instrumental) function of aggression. That is, Dodge and Coie's (1987) proactive scale was not extracted from the factor analysis. Instead, the three items that comprised the original proactive scale were found on three different scales: teacher reactive relational, teacher pure overt, and teacher emotion dysregulation. This finding questions the utility of Dodge and Coie's (1987) original reactive/proactive scale. This study is not alone in suggesting that improvement in the measurement of the construct of proactive aggression is warranted (i.e., McAuliffe, Hubbard, Rubin, Morrow, & Dearing, 2007). Specifically, McAuliffe et al, found in their study of teacher rating their second grade students, that proactive aggression, as measured by Dodge and

Coie's (1987) scale, had lower internal consistency and weaker stability over time compared to the reactive aggression scale.

One explanation as to why the proactive scale was not extracted may be that instrumental intent may have been implied in the items, but was not directly stated. Due to the dissolution of the proactive scale, it is difficult to compare the results of the current study with previous research findings. However, it does seem important to interpret the present study's results within the context of reactive/proactive aggression literature because that scale is intact. Looking more closely at where the original proactive aggression scale statistically loaded in the present study might provide some insight into the construct of proactive aggression and how more appropriate items may be worded. The first scale was the teacher reactive relational scale, which contained items in which the intent of the action appears to be premeditated, similar to the definition of proactive aggression. Teacher pure overt was the second scale a proactive aggression item was placed. As stated above, because intent was not always clear in the original proactive items, it seems logical that the item would load onto a scale that does not specify intent. Finally, emotion dysregulation was the last scale to include a proactive aggression item. Control is an important component of the emotion dysregulation scale, as well as an aspect of the construct of proactive aggression. Investigators may wish to further test the internal consistency of the proactive scale and possibly alter items to better delineate proactive aggression as a function of aggression.

In the present study, there was no difference in frequency of aggression types between the second and third grades. Although only one year separated the present

sample, many researchers have investigated potential age differences among the various types of aggression. They have hypothesized several expectations as to why age differences occur in the population. However, after the analyses are completed, often age does not appear to be a variable (i.e., Card et al, 2008; Card & Little, 2006). Perhaps the lack of an age effect in these meta-analyses is due to having peers rate one another's aggressive behavior via sociometric methods. Sociometric reports are commonly used to rate aggressive behavior in children and it may be difficult to ascertain differences when measuring within the peer group. Also, some of the measures used in the present study were standardized to account for age differences, so one would not expect to observe developmental differences. It is important for future research to continue to utilize longitudinal designs to answer questions regarding potential age differences in aggressive behavior.

This study indicated a large correlation between the different types of aggression, which ranged from 0.20 to 0.80. This pattern was to be expected because items were utilized from well-established, pre-existing scales that have been highly correlated in the past. However, it is notable that when the form and function of the aggressive behavior was distinguished, coupled with the fact that the proactive scale was not present, the correlations found here were more modest. For instance, the teacher reactive relational scale and the teacher reactive overt scale had a correlation of 0.29, which was significant, but only moderately compared to past investigations that reported correlations between only relational and overt aggression scales and did not differentiate function (e.g., Crick, 1996, $r=0.77$; Crick, 1997, $r=0.63$). The results being analyzed here are also in line with the meta-analysis of the distinction between

reactive and proactive aggression in children and adolescents conducted by Polman et al (2007). They found that studies who distinguished between the form and function found lower correlations between the aggression types than studies that did not.

Gender. The results regarding overall gender differences were consistent with prior research in that boys were perceived as more purely overtly aggressive than girls when rated by both their teachers and peers. Many investigations and reviews have found this particular gender difference among children, adolescents, and adults (i.e., Archer, 2004; Card et al, 2008). Some have explained this finding using both sexual selection theory (SST) and social role theory (SRT). SST states that sex differences reflect the evolutionary history in humans of greater male physical aggression. The theory is rooted in the competition for sexual reproduction and emphasizes the role of different responses to anger-producing situations. Within this context, sex differences should be large in physical aggression and in the male direction. SRT refers to the historical division of labor between men and women, in and out of the home and to the gendered expectations of behavior passed on through socialization. According to SRT, physical aggression will also be more prevalent in males, but that sex differences in aggression will be small in magnitude because there is no emphasis on risk-taking behavior in order to act aggressively.

There was a significant gender difference in relational aggression, specifically girls were perceived as more reactively relationally aggressive than boys. Recent reviews have actually found negligible gender differences in relational aggression (Archer, 2004; Card et al, 2008) and while the current study found a significant

correlation between girls and teacher reactive relational aggression ($r = .286$), this association was only moderate. Despite the evidence that relational aggression may be more gender equitable than previously thought, Card et al found a reporter moderation, such that girls are viewed as more relationally aggressive by teachers and parents, but boys view themselves as more relationally aggressive than girls view themselves. Card et al found no observed gender differences in peer nomination or observation studies. The results the study being considered here support this reporter difference because the reactive relational scale was created from teacher ratings. Also, there was no association between gender and either peer reactive relational or peer pure relational aggression, as supported by Card et al. Future studies should continue to investigate gender differences that may arise between types of aggression once form and function are accounted. It will also be important for future investigations to further disentangle the seemingly different relationships amongst various informants of aggressive behavior.

In sum, the results of this factor analyses were more closely in line with the integrative approach proposed by Little et al (2003) than with their originally intended conceptualization. Little et al (2003) found similar support for the reactive relational aggression, pure overt, pure relational, and reactive overt scales using self-reports of upper-middle class German students grades five through ten. The fact that similar scales were generated in the current study with a very different population from Little et al adds to the generalizability of the distinction between form and function of aggressive behavior. It is important to note that Little et al (2003) specifically designed their questions to explicitly tap into the functions and forms of

aggression, whereas the study here used existing scales frequently used in the literature that purportedly measure the forms and functions of aggression separately. It was not the intention of the present study to replicate Little et al's results of producing six distinct factors combining form and function due to the use of existing scales and archival data. Rather, one of the goals of this research was to evaluate a possible alternative approach of aggression classification that integrates form and function of the behavior. This investigation therefore begins to lay the groundwork for future studies to look at gender differences as they relate to the various forms and functions of aggression.

Role of aggression and adjustment

The second purpose of this study was to investigate the association between various aggressive behaviors and both positive and negative psycho-social adjustment. There is a growing body of literature that supports specific links between various maladjustment and overt versus relational aggression, as well as between reactive versus proactive aggression. As previous work and the first part of this investigation has shown, however, form and function need to be considered together when assessing children's aggressive behaviors; moreover, the associations between aggression and adjustment also have to consider these refinements in the conceptualization/assessment of aggression.

Externalizing.

Consistent with previous studies, overt aggression was found to be associated with externalizing behaviors (Crick, 1997; Prinstein et al, 2001). Specifically, teacher

rated pure overt aggression was correlated with teacher rated externalizing behaviors. Teacher rated pure overt aggression was also a significant predictor of teacher rated externalizing behaviors once all other teacher rated aggression scales were accounted. However, peer rated pure overt aggression was not associated with externalizing behaviors, nor was it a significant predictor of externalizing behaviors. One explanation for this finding is method variance and that teachers rated both aggression and externalizing behaviors, whereas peers only rated aggression. Another explanation may be that the two scales, though they are similar in name, differed in the actual wording of the items and contain different examples of pure overt aggressive behavior ($r = .64, p < .01$). Perhaps the teacher and peer scales tapped into different aspects of the pure overt aggression construct. Some researchers have found a significant association between both self-reported and teacher-reported pure overt aggression and peer and teacher-rated externalizing behaviors, including studies that have purposely set out to distinguish between form and function (i.e., Little et al, 2003; Ostrov & Crick, 2007).

The findings being examined here also extend past research by demonstrating that gender moderated the relationship between teacher-rated pure overt aggression and externalizing problems. Specifically, girls who were rated highly aggressive were also rated as having more externalizing problems than boys who were rated as highly aggressive. These results are in-line with the literature concluding that engaging in non-normative aggressive behavior (i.e., overt for girls, and relational for boys) is associated with greater maladjustment (Crick, 1997). However, a recent meta-analysis by Card et al (2008) looked at direct and indirect aggression and their adjustment

correlates and found no moderation of gender between the association of direct (overt) aggression and externalizing difficulties (i.e., Card et al., 2008). The present study differs from those reviewed by Card et al in that a distinction between form and function existed when assessing aggression. Perhaps the discrepant findings are due to differences in the measurement of aggression. This suggests that in the present study when overt aggression is paired with a function (reactive or pure), the externalizing behavior is better explained to the reporter and may be not rated as problematic.

Past research has demonstrated that overtly aggressive children (rated by their teachers, peers, and self reports) were shown to be significantly more externalizing than their peers (e.g., Crick, 1997). More recent literature has broken down the term externalizing into more specific variables (i.e., emotional dysregulation, delinquency/conduct problems, and ADHD-type symptoms) while looking at the association to different types of aggressive behavior. Card et al (2008) found that direct aggression, which includes overt aggression, is uniquely related to emotional dysregulation and ADHD-type symptoms and that teachers' and parents' reports exhibit the largest associations with direct aggression compared to indirect aggression. However, they also found that direct and indirect aggression are both uniquely associated with delinquency and conduct problems and that no reporter moderation was observed. The current study found a large correlation between pure overt aggression (teacher and peer) and emotion dysregulation ($r = 0.64$; $r = 0.65$). Clearly there seems to be a link between emotion dysregulation, pure overt

aggression, and externalizing behaviors and further research appears warranted to clarify these connections.

Internalizing.

For the internalizing variables, the only significant correlation was between depression symptoms, as measured by the CDI, and Peer Reactive Relational aggression. No teacher rated aggression scales were correlated with internalizing problems. That this was the only significant finding was somewhat surprising due to previous literature consistently supporting several connections between various types of aggression and internalizing difficulties, and specifically for depression. For instance, several studies have found an association between depression and relational aggression (e.g., Card et al, 2008; Crick, 1997; Crick, Ostrov, & Werner, 2006), as well as depression and reactive aggression (e.g., Card & Little, 2006; Roach & Gross, 2003; Vitaro et al., 2002). These previous studies have included children ranging from preschool to the twelfth grade and had a variety of informants; self-reports, peers, and teachers. Little consensus has emerged regarding a relationship between types of aggression and depression with respect to age. Several of the aforementioned studies found no evidence of significant age (or grade) differences (e.g., Crick, 1997; Card et al, 2008). In fact, according to Card et al (2008), many studies investigating types of aggression and social-adjustment tend to utilize samples of school-aged children (as does the current study) and to a lesser extent early childhood and older adolescence. This is most likely because sociometric methods of data collection require an intact classroom and often, once children enter middle school (grade 6 or 7), they are no longer with the same group of peers for the entire day, making peer

ratings problematic. In their meta-analysis, Card et al found that age had no significant moderation of either direct (overt) or indirect (relational) aggression with internalizing problems.

The present study is the first to date to find an association between the specific combination of the function (reactive) and form (relational) of aggression and depression. This is an important contribution due to the increase in studies utilizing the distinction between the form and function of aggressive behavior. In addition, after controlling for all other types of aggression, a unique positive association between peer rated reactive relational aggression, as well as negative association with peer pure overt aggression, and self-rated depression was observed. Based on the previous literature, peer-rated pure overt aggression was not expected to be uniquely associated positively with depression symptoms and the significant negative relationship only confirms this pattern. These presented results need to be interpreted with caution because none of the depression scores were in the clinically significant range. Students with clinical levels of depression may report more significant associations with aggressive behavior.

In addition to the significant association between the peer rated reactive relational aggression scale and depression symptoms, a significant association between anxiety symptoms and this specific aggressive behavior was also observed. These results are consistent with past studies that have found the same associations between reactive relational aggression and anxiety (e.g., Crick, 1997; Marsee et al., 2008). The present study also found a unique association between peer rated reactive relational aggression and self-reported anxiety symptoms, and these findings replicate

the results obtained by Marsee et al (2008). Echoing Marsee et al's conclusion, it is important to continue to investigate and measure relational aggression in youth and what other concurrent maladjustment may be associated with the aggressive behavior. Further study seems warranted to explain the reporter differences observed in the present investigation. For example, why were there unique associations with peer reactive relational aggression and self-reported internalizing problems, but not with teacher reactive relational aggression?

Even more interestingly, there was an unexpected gender finding within the group of internalizing variables. Gender was found to be a moderating variable between teacher-rated emotion dysregulation and self-rated depression. Specifically, boys who were rated high on emotion dysregulation rated themselves having less depression symptoms than girls who were also rated high on emotion dysregulation. There was no difference among girls or boys in their self-rated depressive symptoms across low to high aggression groups. Again, these results and conclusions need to be interpreted with caution because all of the depression scores were in the normative range and not in the clinically significant or even at-risk range. Perhaps these unexpected findings within the internalizing domain are the result of measurement perspective and different informants providing the ratings for aggression and adjustment. The present study had teachers and peers rating aggressive behaviors and used teacher and self-report to rate internalizing behaviors, yet there was no association found between either teacher or peer rated aggression and the teacher reported internalizing measure.

It is well documented that cross-informant discrepancies in reporting clinical

symptoms exist (i.e., Achenbach, 2006). Meta-analyses of informant agreement among both youths and adults reveal low to moderate correlations across ratings taken from multiple sources of the same clinical symptoms (e.g., r s ranging from 0.20 to 0.60; Achenbach et al. 2005; Achenbach et al. 1987). Attribution Bias Context (ABC) model developed by De los Reyes and Kazdin (2005) posits that informant discrepancies are indicative of cross-contextual variability in children and informants perspective on this behavior. Based on the ABC framework, children are more likely to attribute the causes of their problems to the context or environment and are less likely to attribute their disposition. Observers (teachers or parents) are more likely to attribute the causes of problematic behavior to the child's disposition, rather than to the situational context. As such, observers will agree with one another's ratings, but will be discrepant with the child's ratings. Importantly, ABC theory does not state the expected agreements or discrepancies between peer and self and/or other observer ratings of behavior. This would seem to be an important addition, especially due to the frequency with which peer ratings are used in investigations of aggressive behavior. ABC theory may account for some of the discrepancies in the current study regarding the ratings between teacher and self reported internalizing behaviors. For instance, there was no correlation between teacher internalizing and self-reported depression ($r = .13$), yet, there was a correlation between self reported depression and self-reported anxiety ($r = .25$).

A similar pattern was exhibited in regard to gender moderation of teacher reactive overt aggression and anxiety symptoms. Again, boys who were rated high on the teacher reactive overt aggression scale, rated themselves as having less anxiety

symptoms than girls, who were also rated high on the teacher reactive overt aggression scale. Adding to the complexity of this finding is the negative slope of anxiety scores that indicate less aggressive boys reported more anxiety symptoms than more aggressive boys. There was no difference in girls' anxiety scores across aggression groups. This was unexpected given the trends in the literature that support the opposite observation, being that increased aggression is associated with an increase in anxiety and other internalizing difficulties (e.g., Card et al, 2008; Card & Little, 2006). These results appear in-line with more recent literature concentrating on the distinction between the form and function of aggression and its differential effects on adjustment. For example, Marsee, Weems, and Taylor (2008) found that in their sample of ethnically diverse sample between the ages of six and seventeen who rated themselves on all measures, high levels of peer-rated reactive relational aggression were associated with and predicted higher anxiety symptoms and that boys exhibited more reactive relational aggression in their study than girls when they experienced higher levels of self-rated anxiety. In fact, most of the literature has found a connection between peer-rated relational aggression and anxiety (e.g., Crick, 1997), as well as between teacher-rated reactive aggression and self-rated anxiety (Dodge et al, 1997; Vitaro et al, 2002). It appears as though the present study has found a specific association between teacher-rated reactive overt aggression and self-rated anxiety when utilizing existing scales of teacher reported aggression. The same effect was not replicated with peer-rated aggressive behavior.

Another explanation for the unexpected finding that, for boys, as aggression increased, their anxiety decreased. This could be rooted in peer relations and social

status within the peer group. Boys who are less anxious may not be as concerned with retaliation and may be less inclined to respond to a perceived threat undetected (by using overt aggression). They may not be as concerned with the potential social consequences.

Peer relations.

Unlike past investigations, this study did not find associations between peer rejection, as measured by teacher ratings or peer ratings, and any type of aggression. Also, when controlling for all other types of aggression, there was no unique association between types of aggression and peer rejection. There is well-established literature that supports the link between peer rejection, measured by both teacher and peer ratings, and reactive, relational, and direct aggression (e.g., Card & Little, 2006; Rys & Bear, 1997). This link is stable among school-aged children (usually grades three through six). The results of Card and Little's (2006) meta-analysis revealed that both reactive and proactive aggression were independently associated with peer rejection, with a significantly stronger association for reactive aggression. The results of Card et al's (2008) meta-analysis found that both direct and indirect aggression was independently associated with peer rejection, with a stronger association for direct aggression. In the present study the lack of a significant correlation and/or a significant unique association of aggression types with peer rejection was somewhat unexpected. A possible explanation could be due to the relatively low ratings of peer rejection given by the teachers.

In the literature, there are generally three ways to measure sociometric status; social preference (measures include liking and disliking by peers, often computed by

subtracting the standardized number of dislike nominations received from the number of standardized number of nominations received), peer acceptance (measures of being liked by the peer group), and peer rejection (measures of being disliked by the peer group). This study used a peer rejection measure, which included items such as “Is excluded from the group.” A social preference measure was used as a positive adjustment variable, as only liking nominations were calculated, and is discussed below. The results of studies mentioned above in comparison to the current investigation utilize a peer rejection measure. It would be interesting for future studies to look at what relationships, if any, emerge between the different types of aggression and different methods of measuring peer interactions. As Card and Little (2006) point out, prior literature has shown that peer rejection, social preference, and peer acceptance empirically refer to different aspects of social status.

In the past, form (overt/relational) and function (reactive/proactive) were considered at independently, and it is only recently that researchers are beginning to specify the difference in aggressive behaviors and apply the distinction to adjustment outcomes. As a result, the current study was trying to add to the knowledge base regarding form and function and their relation to peer rejection. Previously, Ostrov and Crick (2007) found a relationship between proactive relational, reactive physical and proactive physical aggression and peer rejection in a sample of preschoolers, who were rated by both their teachers and observed by researchers. However, in the current study, no proactive function was present in the aggression scales and no association was present between teacher reactive overt aggression and peer rejection.

Positive Adjustment.

Contrary to previous research (e.g., Card & Little, 2006), there were no significant correlations between types of aggression and positive adjustment variables. The distinction between form and function of aggressive behavior, however, may play a more important role in the relationship between prosocial behaviors and aggression. By measuring aggression subtype, there may be different associations with prosocial variables.

As the analyses became more focused, however, specific patterns did emerge with respect to aggression and prosocial behaviors. The present study observed a unique negative association between peer-rated prosocial behaviors and peer pure overt aggression, after controlling for all other peer rated aggression types. This finding is supported by the literature that has also observed negative associations between direct aggression and prosocial behavior (Card et al, 2008). The presence of only a peer association is also supported by a reporter effect in past studies focusing on function of aggression and extends this effect to form of aggression as well (Card & Little, 2006). According to Card and Little (2006), when peers report the function of aggression, there are stronger associations with low prosocial behavior compared to when teachers report the function of aggression. The data in the present study was critically examined for a possible curvilinear relationship between aggression and prosocial behavior. Analysis of the scatterplots of the association between prosocial behavior and aggression revealed a linear relationship. Researchers have found both linear and curvilinear relationships between positive and negative social behaviors, including prosocial and aggressive acts (Zimmer-Gembeck, Geiger, & Crick, 2005).

An interesting gender finding regarding positive adjustment outcomes was discovered in the present study. Gender appeared to moderate the relationship between peer-rated prosocial behaviors and teacher rated emotion dysregulation, such that boys who were rated as highly emotionally dysregulated were also rated as less prosocial than girls who were also rated highly emotionally dysregulated. It appears as though having emotional dysregulation may have more social consequences for boys, at least in terms of how prosocial they are perceived by their peers. This could have further effects on boys' social status and friendships within their peer group. Gender also moderated the relationship between peer liking and teacher rated emotion dysregulation, as well as peer pure relational aggression. What is interesting is that these two aggression scales were the two scales comprised of cross loaded items. It will be important for future investigations to further develop the constructs of the emotional dysregulation and peer pure relational scales because, although they were created by utilizing cross loaded items, these scales appear to have associations with correlates the neatly loaded scales did lack.

Although not targeted in the present study, another important positive adjustment variable is academic achievement. Several studies have found associations between academic achievement and aggressive behavior. Miles and Stipek (2006) found that poor literacy achievement in first and third grades predicted relatively high aggressive behavior in third and fifth grades, respectively, and Arnold (1997) observed that misbehavior (aggression, hostility, and non-compliance) predicted low on-task behavior in a study of 4 to 6 year old boys. The misbehavior prompted the teachers to remove the boys from the classroom and presumably as a consequence,

the boys spent less time learning the material presented during that lesson. The effect of aggression on students' engagement and learning may be mediated by the relationships students develop with their teachers. For example, Hamre and Pianta (2001) found that among children who were identified as having behavior problems in Kindergarten, those who developed relationships with teachers characterized by low levels of conflict and dependency had fewer discipline problems and more positive motivations than their counterparts through eighth grade.

Limitations and conclusion

The results from the present study need to be interpreted in light of some limitations. Sample characteristics are an important limitation to discuss. The size of the sample was small, which could have affected the statistical power to detect significant associations among the variables. Therefore, the interpretation of non-significant findings should be made cautiously. Also, the current study was conducted with a general school population and may not be generalizable to specifically at-risk students or those who exhibit severe behavioral and/or emotional difficulties. As already stated, many of the aggression and adjustment variables were not in the at-risk or clinically significant range. Another limitation with regard to the setting is that the present study was conducted in one school. The culture of the school is an important variable to consider when interpreting the present results. This particular school had a no tolerance policy for aggressive behavior. The teachers and administration strictly enforced the rules and the students had a clear understanding of expected behavior. This structured environment may have influenced the low aggression ratings.

The sample demographic makeup could be considered both a limitation and a potential strength of this study's results. The majority of students in the present sample were identified from racial/ethnic groups often under represented in research (i.e., 67% African American, 17% Hispanic, 11% Asian American, 5% Caucasian). Although this makes it difficult to directly compare to other investigations, the present study is able to add to the literature regarding these often less studied groups. Some of the unexpected findings may have implications for these particular racial/ethnic groups. Research has begun to look explicitly at the racial/ethnic differences in internalizing and externalizing symptoms but the results are inconsistent (McLaughlin, Hilt, & Nolen-Hoeksema, 2007). Specifically, questions regarding the racial/ethnic differences in the prevalence of the various types of aggression have yet to be fully researched.

Finally, the measurement of the variables was limited and should be noted as such. Aggression was measured as a continuous variable in this study, yet very often in other investigations groups by aggression score are created in order to focus on more extreme forms of aggression. The difference in measurement might have contributed to some of the unexpected findings in the present study. Related to this idea, the present sample had average to low ratings for many of the aggression and adjustment variables. The patterns found in previous research regarding the relationships between types of aggression and adjustment at the clinical level may be different than those patterns exhibited when lower levels of these behaviors are observed.

Despite these limitations, there are several strengths that should also be recognized. By examining the aggression construct with established scales, these new results can be compared to the current literature. The present findings have indicated certain areas where unanswered questions should be explored and refinement of past results and conclusions could be re-examined and strengthened. There were also a variety of informants, teachers, peers, and the students themselves who reported on the variables. Many previous investigations have called for multi-informant methodologies (e.g., De Los Reyes & Kazdin, 2005). Additional research is needed to sort out the inconsistent findings among some of the aggression and adjustment variables, as well as to confirm the original findings presented in the current investigation.

Appendices

Appendix A

Results of Hierarchical Regressions

Hierarchical regression analyses examining the unique associations of teacher aggression scales with BASC internalizing

Step		R ²	R ² Δ	β	t	p
1	TreOv	.007	.007	.111	.775	.440
	TpuOV			-.059	-.410	.683
2	TreRel	.008	.001	.033	.293	.770
1	TreRel	.006	.006	.062	.552	.582
	TreOv			.027	.238	.812
2	TpuOv	.008	.002	-.064	-.443	.659
1	TreRel	.002	.002	.048	.428	.670
	TpuOv			.001	.012	.991
2	TreOv	.008	.006	.103	.706	.482
1	TreRel	.008	.008	.033	.293	.770
	TpuOv			-.064	-.443	.659
	TreOv			.103	.706	.482
2	TEDys	.021	.013	.252	1.071	.287

Hierarchical regression analyses examining the unique associations of peer aggression scales with BASC internalizing

Step		R ²	R ² Δ	β	t	p
1	PreRel	.020	.020	-.066	-.462	.644
	PpuRel			.176	1.233	.221
2	PpuOv	.029	.009	-.133	-.907	.367
1	PpuRel	.027	.027	-.137	-.945	.347
	PpuOv			.227	1.561	.122
2	PreRel	.029	.002	-.056	-.389	.698
1	PpuOv	.003	.003	-.010	-.083	.934
	PreRel			.059	.477	.635
2	PpuRel	.029	.026	.261	.130	.130

Hierarchical regression analyses examining the unique associations of teacher aggression scales with CDI

Step		R ²	R ² Δ	β	t	p
1	TreOv	.009	.009	-.074	-.500	.618
	TpuOV			.130	.876	.383

2	TreRel	.037	.028	.176	1.601	.113
1	TreOv	.030	.030	-.038	-.349	.728
	TreRel			.181	1.656	.101
2	TpuOv	.037	.007	.116	.782	.436
1	TreRel	.030	.030	.160	1.484	.141
	TpuOv			.036	.333	.740
2	TreOv	.037	.007	-.118	-.789	.432
1	TreRel	.037	.037	.176	1.601	.113
	TpuOv			.116	.782	.463
	TreOv			-.118	-.789	.432
2	TEDys	.037	.000	.047	.193	.847

Hierarchical regression analyses examining the unique associations of teacher aggression scales with MASC

Step		R2	R2Δ	β	t	p
1	TreOv	.035	.035	.215	1.464	.147
	TpuOV			-.264	-1.796	.076
2	TreRel	.043	.007	.090	.822	.413
1	TreOv	.006	.006	.004	.037	.971
	TreRel			.077	.700	.486
2	TpuOv	.043	.036	-.271	-1.841	.069
1	TreRel	.025	.025	.116	1.072	.286
	TpuOv			-.142	-1.312	.193
2	TreOv	.043	.018	.192	1.286	.202
1	TreRel	.043	.043	.090	.822	.430
	TpuOv			-.271	-1.841	.069
	TreOv			.192	1.286	.202
2	TEDys	.043	.000	-.023	-.094	.925

Hierarchical regression analyses examining the unique associations of teacher aggression scales with teacher-rated peer rejection

Step		R2	R2Δ	β	t	p
1	TreOv	.001	.001	-.044	-.297	.767
	TpuOV			.016	.111	.912
2	TreRel	.012	.011	.110	.995	.323
1	TreOv	.012	.012	-.067	-.611	.543
	TreRel			.110	1.005	.317
2	TpuOv	.012	.000	.007	.049	.916
1	TreRel	.010	.010	.100	.926	.357
	TpuOv			-.041	-.382	.703
2	TreOv	.012	.002	-.072	-.476	.635
1	TreRel	.012	.012	.110	.995	.323
	TpuOv			.007	.049	.961
	TreOv			-.072	-.476	.635

2	TEDys	.029	.017	-.301	-1.245	.216
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Hierarchical regression analyses examining the unique associations of peer aggression scales with teacher-rated peer rejection

Step		R2	R2Δ	β	t	p
1	PreRel	.001	.001	.056	.366	.715
	PpuRel			-.044	-.290	.773
2	PpuOv	.031	.029	-.267	-1.643	.104
1	PpuRel	.028	.028	-.260	-1.617	.109
	PpuOv			.195	1.211	.229
2	PreRel	.031	.003	.075	.494	.622
1	PpuOv	.024	.024	-.190	-1.484	.141
	PreRel			.135	1.054	.295
2	PpuRel	.031	.006	.146	.770	.443

Hierarchical regression analyses examining the unique associations of teacher aggression scales with peer liking scores

Step		R2	R2Δ	β	t	p
1	TreOv	.040	.040	-.233	-1.594	.114
	TpuOV			.053	.365	.716
2	TreRel	.041	.002	.043	.398	.692
1	TreOv	.040	.040	-.210	-1.931	.057
	TreRel			.046	.422	.674
2	TpuOv	.041	.001	.050	.338	.736
1	TreRel	.013	.013	.011	.099	.921
	TpuOv			-.115	-1.058	.293
2	TreOv	.041	.029	-.244	-1.633	.106
1	TreRel	.041	.041	.043	.398	.692
	TpuOv			.050	.338	.736
	TreOv			-.244	-1.633	.106
2	TEDys	.061	.020	.325	1.364	.176

Hierarchical regression analyses examining the unique associations of peer aggression scales with peer liking

Step		R2	R2Δ	β	t	p
1	PreRel	.035	.035	.220	1.466	.146
	PpuRel			-.268	-1.791	.077
2	PpuOv	.044	.008	-.143	-.879	.382
1	PpuRel	.018	.018	-.123	-.757	.451
	PpuOv			-.016	-.099	.922
2	PreRel	.044	.025	.230	1.528	.130

1	PpuOv	.035	.035	-.230	-1.790	.077
	PreRel			.161	1.254	.213
2	PpuRel	.044	.008	-.167	-.880	.381

Hierarchical regression analyses examining the unique associations of teacher aggression scales with teacher-rated prosocial scores

Step		R2	R2Δ	β	t	p
1	TreOv	.008	.008	-.085	-.573	.568
	TpuOV			-.007	-.044	.965
2	TreRel	.012	.004	.064	.579	.898
1	TreOv	.012	.012	-.109	-.997	.321
	TreRel			.063	.578	.564
2	TpuOv	.012	.000	-.012	-.080	.936
1	TreRel	.007	.007	.050	.465	.643
	TpuOv			-.080	-.739	.462
2	TreOv	.012	.005	-.101	-.668	.506
1	TreRel	.012	.012	.064	.579	.564
	TpuOv			-.012	-.080	.936
	TreOv			-.101	-.668	.506
2	TEDys	.012	.000	-.011	-.044	.965

Hierarchical regression analyses examining the unique associations of peer aggression scales with teacher-rated prosocial scores

Step		R2	R2Δ	β	t	p
1	PreRel	.005	.005	-.001	-.009	.993
	PpuRel			.070	.461	.646
2	PpuOv	.005	.000	-.026	-.157	.875
1	PpuRel	.005	.005	-.026	-.158	.416
	PpuOv			.089	.544	.588
2	PreRel	.005	.000	.000	.003	.997
1	PpuOv	.003	.003	.020	.156	.658
	PreRel			.037	.286	.658
2	PpuRel	.005	.002	.088	.459	.302

Hierarchical regression analyses examining the unique associations of teacher aggression scales with peer-rated prosocial behaviors

Step		R2	R2Δ	β	t	p
1	TreOv	.019	.019	-.120	-.808	.421
	TpuOV			-.026	-.175	.862
2	TreRel	.021	.001	-.037	-.338	.736
1	TreOv	.020	.020	-.126	-1.147	.254
	TreRel			-.038	-.350	.727

2	TpuOv	.021	.000	-.023	-.152	.879
1	TreRel	.015	.015	-.052	-.481	.632
	TpuOv			-.097	-.894	.374
2	TreOv	.021	.006	-.110	-.728	.468
1	TreRel	.021	.024	-.037	-.338	.736
	TpuOv			-.023	-.728	.879
	TreOv			-.110	-.728	.468
2	TEDys	.024	.003	.130	.535	.594

Appendix B

Results of All Factor Loadings

Factor Loadings for the Teacher Rated Aggression Instrument

<u>Item</u>	<u>Factor</u>		
	<u>Reactive Relational</u>	<u>Reactive Overt</u>	<u>Pure Overt</u>
Gets others to be angry at someone or ignore others	.940	.090	.125
Keeps others from joining group	.848	.178	.235
Gets others in trouble with friends	.826	.169	.369
Spreads rumors or gossips	.790	.320	.079
Gets others to gang up on a peer	.786	-.062	-.065
Strikes back when teased	.096	.894	.189
Blames others in a fight	.007	.867	.340
Gets into verbal arguments	.228	.753	.275
Overreacts angrily to accidents .	.141	.730	.341
When frustrated, quick to fight	.002	.271	.905
Starts fights with peers	.124	.289	.895
Threatens and bullies others	.295	.353	.707

Factor Loadings for the Peer Nomination of Aggression Instrument

<u>Item</u>	<u>Factor</u>	
	<u>Pure Overt</u>	<u>Reactive Relational</u>
Kids who say they will beat up	.822	
Kids who hit	.819	
Kids who push	.818	
Kids who when mad get even by keeping others from with person being friends		.868
Kids who when mad try to keep certain people from group		.770
Kids who when mad ignore person		.643

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