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EXPLORING THE FUNCTIONAL SUBTYPES OF RELATIONAL AND
OVERT AGGRESSION IN A SAMPLE OF DETAINED GIRLS

A Dissertation

Submitted to the Graduate Faculty of the
University of New Orleans
in partial fulfillment of the
requirements for the degree of

Doctor of Philosophy
in
The Department of Psychology

by

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B.A., University of Alabama, 1999
M.S., University of New Orleans, 2003

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Abstract

In the current study, we investigated the association between relational aggression and measures of delinquency and overt aggression in a sample of detained adolescent girls. We also tested the validity of the distinction between reactive and proactive subtypes of relational aggression by testing their independent associations with important emotional, behavioral, personality, social, and cognitive variables that have been studied in past research and found to be important for distinguishing between reactive and proactive overt aggression. Our sample consisted of 58 predominantly African-American (78%) adolescent girls recruited from three juvenile detention centers in the southeastern United States. Participants ranged in age from 12 to 18 (Mn = 14.98; SD = 1.30). Relational aggression was measured using both self-report and observation, while overt aggression, delinquency, and social-psychological variables were measured using self-report only. As predicted, both self-reported and observed relational aggression were associated with higher rates of self-reported delinquency. Self-reported relational aggression was also associated with self-reported overt aggression, while observed relational aggression was not. On a self-report rating scale, we found evidence for four subscales that were moderately correlated and had good internal consistency. These subscales corresponded to the four aggressive subtypes (i.e., reactive overt, reactive relational, proactive overt, proactive relational). Further, we found evidence for divergence between reactive and proactive relational aggression on emotional dysregulation, CU traits, and positive outcome expectations for aggression, supporting the hypothesis that these are important subtypes that could involve distinct developmental processes, similar to reactive and proactive subtypes of overt aggression. Finally, this study found that relational aggression accounted for unique variance in callous and unemotional (CU) traits among detained girls, even after controlling for levels of overt aggression. The current findings

highlight the importance of assessing relational aggression in detained girls and could have implications for designing more successful interventions for girls in the juvenile justice system.

Key Words: delinquency, relational aggression, proactive aggression, reactive aggression, girls

Introduction

Overview

Aggression is generally defined as behaviors that are intended to hurt or harm others (e.g., Berkowitz, 1993). These harmful behaviors can take on different forms and can be manifested physically, verbally, and/or socially. Research on externalizing problems in children has often focused on the presence or absence of aggression in an attempt to subtype groups of youth who may share common profiles of problem behavior. This subtyping approach has proven to be highly useful for the study of the development of aggression, in that different subtypes seem to be associated with different developmental mechanisms and correlates (see Frick & Marsee, in press, for a discussion). Recent research has attempted to narrow the conceptualization of aggression down to the forms (overt and relational) and the functions (reactive and proactive) of aggressive behavior (Little, Jones, Henrich, & Hawley, 2003).

Overt and relational forms of aggression can be descriptively distinguished by their method of harm and the goals they serve. Overt aggression harms others by damaging their physical well-being and includes physically and verbally aggressive behaviors such as hitting, pushing, kicking, and threatening (Coie & Dodge, 1998; Parke & Slaby, 1983). In contrast, relational aggression¹ harms others by damaging social relationships, friendships, or feelings of inclusion and acceptance in the peer group (Crick et al., 1999b). Relational aggression consists of behaviors such as gossiping about others, excluding target children from a group, spreading rumors, or telling others not to be friends with a target child (Björkqvist, Lagerspetz, & Kaukiainen, 1992a; Crick & Grotpeter, 1995; Lagerspetz, Björkqvist, & Peltonen, 1988).

¹ While Crick and colleagues use the term “relational” aggression, other researchers have used different terminology to refer to this type of behavior (i.e., “indirect” aggression; Björkqvist et al., 1992a; and “social” aggression; Galen & Underwood, 1997). These three labels have often been used interchangeably in the literature, with some researchers claiming that “the same phenomena is referred to by the three concepts” (Björkqvist, 2001). While the three types are measured in somewhat different ways, they are virtually indistinguishable in terms of their basic characteristics and goals, in that they all focus on harming others through social manipulation strategies. Therefore, in order to maintain parsimony, the current investigation will utilize the term relational aggression to refer to this type of behavior.

In addition to relational and overt forms of aggression, researchers also have identified two important functions of aggressive behavior: reactive and proactive aggression (Dodge & Coie, 1987; Dodge, 1991). Reactive aggression, also referred to as hostile or impulsive aggression, is generally defined as aggression that occurs as an angry response to provocation or threat (e.g., Berkowitz, 1993). This type of aggression is derived from the frustration-aggression model (Berkowitz, 1990; Dollard, Doob, Miller, Mowrer, & Sears, 1939), which posits that aggressive responses are hostile, angry reactions to perceived frustration. In contrast, proactive or instrumental aggression is defined as aggression that is unprovoked and is used for instrumental gain or dominance over others (Dodge & Coie, 1987; Dodge, 1991). Social learning theorists hypothesize that this type of aggression is learned and controlled through environmental reinforcements (Bandura, 1973).

Both the forms (overt and relational) and the functions (reactive and proactive) of aggression have been studied with regard to their unique and common features (e.g., cognitive, emotional, and personality correlates), their developmental course, and their outcomes related to social adjustment. Recently, researchers have begun to examine these dimensions of aggression as they relate to each other and to outcome variables in an attempt to “disentangle” the forms from the functions (Little et al., 2003). A specific issue that has arisen in this research is the potential utility of the reactive/proactive distinction with regard to relational aggression (Crick et al., 1999b; Crick & Werner, 1998; Little et al., 2003). If relational aggression can be broken down into reactive and proactive subtypes that share similar correlates as those of overt aggression, this would provide support for the idea that relational aggression is truly a manifestation of the same “aggression” construct as overt aggression. The following discussion will review subtypes of aggression and will conclude with suggestions for integrating models of

aggression in order to clarify the mechanisms involved in the development of aggressive behavior in youth.

Overt Versus Relational Aggression

Patterns of covariation

Overt and relational aggression have been found to be moderately correlated in past research, suggesting that they represent distinct yet related constructs. While positive correlations (r s ranging from approximately .50 to .70) have been obtained in both normative and clinical samples (e.g., Crick, 1996; Moretti, Holland, & McKay, 2001), factor analyses of teacher (Crick, 1996; Rys & Bear, 1997), self (Prinstein, Boergers, & Vernberg, 2001), and peer ratings (Crick & Grotpeter, 1995) provide good evidence for the distinctiveness of relational and overt aggression. Further, many studies have found that relational aggression predicts social-psychological maladjustment above and beyond overt aggression, specifically for girls (e.g., Crick, 1996; Crick & Grotpeter, 1995; Prinstein et al., 2001). Although results are mixed with regard to gender differences in relational aggression (Pakaslahti & Keltikangas-Jarvinen, 2000; Tiet, Wasserman, Loeber, McReynolds, & Miller, 2001; Tomada & Schneider, 1997) many studies have found significant gender differences (e.g., Björkqvist et al., 1992a; Crick & Grotpeter, 1995; Crick, Casas, & Mosher, 1997; Lagerspetz et al., 1988), highlighting the relative importance of this construct for girls.

Past studies have also found strong gender differences in overt aggression. Specifically, research has consistently shown that boys are significantly more physically and overtly aggressive than girls (Block, 1983; Brodzinsky, Messer, & Tew, 1979; Crick et al., 1997; Lagerspetz et al., 1988; Maccoby & Jacklin, 1980). These studies of traditional boys' aggression have elicited a list of behaviors thought to be characteristic of boys, such as hitting, kicking,

striking out, profanity, verbal abuse, threatening to beat up others, starting fights, name-calling, and pushing. In an extensive review of several decades' worth of aggression literature, Block (1983) provided support for the contention that overall, boys are more aggressive than girls from an early age. Several characteristics of the development and structure of boys' aggression were noted: (1) boys engage in "rough-and-tumble play"; (2) boys more often than girls attempt to dominate their peers; (3) boys engage in more physical aggression than girls; (4) boys exhibit more antisocial behavior than girls; (5) boys prefer television programs with violent or aggressive content; and (6) boys are more competitive than girls. More recent studies also have shown that boys use physical or overt types of aggression more often than girls. When asked to cite the most common behavior that boys engage in when they are angry with others, elementary school boys consistently reported physically aggressive acts (Crick, Bigbee, & Howes, 1996). Moreover, both peers and teachers consistently rated boys as more overtly or physically aggressive than girls (Björkqvist et al., 1992a; Crick et al., 1997; Crick & Grotpeter, 1995; Lagerspetz et al., 1988).

As can be seen from the research cited above, clear gender differences appear to exist in the construct of aggression, with boys typically seen as more aggressive overall than girls. However, while restricting definitions of aggression to overt or physical manifestations results in significant gender differences, broadening the construct of aggression to include relational aggression often negates these differences. When including definitions of relational aggression in studies of gender differences, it becomes clear that girls can be just as aggressive as boys, albeit in different ways. Crick and Grotpeter (1995) hypothesized that girls focus more on social issues during their interactions with their peers. Therefore, when attempting to harm others, girls are more likely to use social manipulation strategies that damage other children's friendships or

status within the peer group. Several studies have shown that when girls are aggressive, they prefer to use relational aggression more often than boys do. Gender differences in relational aggression have been found in preschool children (Crick et al., 1997), middle school children (Björkqvist et al., 1992a; Crick & Grotpeter, 1995; Lagerspetz et al., 1988), adolescents (Moretti et al., 2001), and adult samples (Björkqvist, Osterman, & Lagerspetz, 1994).

Development of overt and relational aggression

Decades of research have been conducted on the development of overt or physical aggression (see Coie & Dodge, 1998, for a review). From early frustration-aggression models (e.g., Dollard et al., 1939) to later social learning theories (e.g., Bandura, 1973), hypotheses regarding the causes of overtly aggressive behavior are numerous. Some researchers focus on the influence of deviant peers (Moffitt, 1993), while others suggest that harsh and inconsistent parenting (Coie & Dodge, 1998; Dodge & Pettit, 2003) and/or low levels of parental warmth in childhood (Brennan, Hall, Bor, Najman, & Williams, 2003; Olweus, 1980; Pettit, Bates, & Dodge, 1993; Patterson, Forgatch, Yoerger, & Stoolmiller, 1998) are key factors in the development of aggressive behavior.

In contrast to overt aggression, much less research has been conducted on the development of relational aggression. For this reason, this section will focus primarily on the development of relational aggression. A growing body of research suggests that relationally aggressive strategies become more common as children age, particularly for girls (Björkqvist et al., 1992a; Björkqvist, Lagerspetz, & Österman, 1992b; Cairns, Cairns, Neckerman, Ferguson, & Garipey, 1989; Xie, Farmer, & Cairns, 2003). Björkqvist and colleagues (1992a) compared 8, 11, and 15-year old children and found that relational aggression was more common among older girls than among younger girls. In contrast, they found that physical aggression was more

prevalent among boys of all age groups. While this study did find gender differences in physical aggression among younger groups of boys and girls (i.e., 8-year old boys were significantly higher than 8-year old girls), some studies have found that younger girls show just as much physical aggression as boys, but that they begin to resort to relational strategies as they get older (Cairns et al., 1989; Xie et al., 2003). For example, Cairns et al. found that while overtly aggressive behaviors were characteristic of boys' conflicts in both childhood and early adolescence, socially aggressive behaviors (e.g., social manipulation, ostracism, rumors) emerged as major strategies for girls as they entered adolescence. However, these girls were still just as likely to use overt strategies as boys were in childhood. Similarly, Xie et al. (2003) found that high levels of physical aggression were reported for both boys and girls in the first grade; however, while boys stayed high on physical aggression in grades 4 and 7, girls began to show decreases in physical aggression and increases in both verbal and relational aggression. These results are in line with the developmental theory proposed by Björkqvist et al. (1992b), which suggests that physical, verbal, and relational aggression are three developmental phases, "partly following, partly overlapping each other" (p.58).

Björkqvist et al. (1992b) hypothesized that children's aggressive strategies change as their verbal and social skills develop. They suggested that young children utilize physical aggression more often because they have not yet developed these skills. Thus, they attributed increases in relational aggression to increased social skills or "social intelligence" (Björkqvist et al., 1992b; Kaukiainen et al., 1999). Social intelligence in this context refers to children's "performance competencies in a social context" and is measured with items such as "notices easily if others lie," "is able to get his/her wishes carried out," "is aware of the weak spots of others," "is able to take advantage of others," and "is able to talk others into taking his/her side"

(p.85). Kaukiainen et al. assessed social intelligence in aggressive children and found that higher levels were associated with higher levels of relational aggression. In contrast, overt forms of aggression were not associated with social intelligence. Thus, it appears that the use of relational aggression requires a higher level of social competence than the use of physically aggressive strategies.

Taken together with results from studies of social influences, these results can be used to describe a potential developmental pathway to relational aggression. Studies have shown that children begin to use relational aggression in peer interactions as early as age three (Crick et al., 1997; Crick, Casas, & Ku, 1999a). While results from Björkqvist and colleagues (Björkqvist et al., 1992b; Kaukiainen et al., 1999) suggest that children do not often use this form of aggression at young ages due to lack of social intelligence, Crick and Rose (2000) point out that the relationally aggressive acts of preschoolers do not require advanced cognitive abilities, as they “typically involve relatively simplistic, directly confrontative behaviors that are enacted in the immediate moment” (e.g., covering one’s ears to signal ignoring) (p. 156). Björkqvist et al.’s theory becomes more relevant as children get older and begin to realize that directly aggressive behaviors are undesirable and may result in rejection by peers.

As social intelligence develops further in middle childhood, friendships and social networks become increasingly salient, and children may begin to realize that they can manipulate relationships as a means of harming others or getting what they want (Crick et al., 1999b). At this point, children (particularly girls) may begin to learn relationally aggressive behaviors through interactions with their parents and/or siblings (see Crick et al., 1999b, for a discussion). For example, gender differences may emerge at this age due to siblings’ differential use of

relational aggression towards sisters and overt aggression towards brothers (see O'Brien, 1999, as cited in Crick, 2003).

Relationally aggressive children's exclusive and intimate relationships with their parents may also contribute to their exclusivity in friendships. That is, children may learn relationally aggressive manipulation strategies from their parents that are useful for maintaining closeness with some individuals while simultaneously excluding others. This may be particularly true for girls, as their friendships tend to be closer and more focused on interpersonal issues than those of boys (see Block, 1983, for a review). Friendship exclusivity may perpetuate the use of relationally aggressive strategies by providing a context in which they are likely to be effective. The ability to successfully maintain exclusivity and control over one's friends through relationally aggressive behaviors may also place the aggressive child at the center of his or her social network (Xie, Cairns, & Cairns, 2002a; Xie, Swift, Cairns, & Cairns, 2002b; Xie et al., 2003). Relationally aggressive children's network centrality is also likely related to their high levels of social intelligence (Kaukiainen et al., 1999), which may give them an advantage over less savvy children in social situations.

As children move into late adolescence and young adulthood, the development of romantic relationships may provide a new context in which relational aggression is exhibited (Crick & Rose, 2000). As with same-gender friendships, young adults may use relational aggression in their romantic relationships as a result of learning from their parents that this is an effective (yet maladaptive) means of maintaining closeness and exclusivity. In support of this hypothesis, recent research found a positive association between parent-child enmeshment and the use of relational aggression in interactions with romantic partners (Linder, Crick, & Collins, 2002). Interestingly, this study found no differences in the use of "romantic" relational

aggression between men and women. This finding is consistent with Björkqvist et al.'s (1992b) theory that indirect means of aggression should increase in men during adulthood. The lack of gender differences in relational aggression among young adult men and women could be due to increases in social intelligence among men (which may lead to the realization that overtly aggressive behaviors are socially undesirable), or to the dyadic nature of the romantic relationship (Linder et al., 2002). Linder et al. suggest that the “dyadic context of romantic relationships affords equal opportunities for men and women to use relational aggression” (p. 80). Thus, equal rates of relational aggression among older men and women may reflect a developmental change in social context, such that men “catch up” with women in terms of relational aggression because they move away from the larger social groups of childhood and into more intimate dyads with romantic partners.

Adjustment of children with overt or relational aggression

Regardless of gender, children who engage in overt and/or relational aggression have many social, psychological, and school-related adjustment problems (Coie & Dodge, 1983; Crick, 1996; Crick et al., 1997; Prinstein et al., 2001; Rys & Bear, 1997; Tomada & Schneider, 1997; Werner & Crick, 1999). Overtly aggressive children have been shown to exhibit significantly higher rates of externalizing problems such as Conduct Disorder (CD), Oppositional Defiant Disorder (ODD), and Attention-Deficit Hyperactivity Disorder (ADHD) than their nonaggressive peers (Coie & Dodge, 1983; Coie, Lochman, Terry, & Hyman, 1992; Crick, 1997; Prinstein et al., 2001). Further, overt aggression has been shown to predict social problems such as peer rejection (Henington, Hughes, Cavell, & Thompson, 1998; Rys & Bear, 1997; Tomada & Schneider, 1997), low self-esteem, depression, and loneliness (Prinstein et al., 2001). Overtly aggressive children often also exhibit a hostile attributional bias (i.e., the tendency to interpret

ambiguous situations as hostile), which likely contributes to increased levels of peer rejection and loneliness (Dodge & Coie, 1987). Aggressive children also seem to be at increased risk for later drug and alcohol problems, delinquent behavior (Lochman & Wayland, 1994), marital problems, and unemployment (Farrington, 1991). Further, several studies have found associations between aggression and psychopathic traits in children (see Edens, Skeem, Cruise, & Cauffman, 2001, for a review).

Children who use relational aggression also have been found to exhibit several social and psychological adjustment problems. A consistent finding in research on relationally aggressive children is that they are often rejected by their peers (Crick, 1996; Crick & Grotpeter, 1995; Crick et al., 1997; Henington et al., 1998; Rys & Bear, 1997; Tomada & Schneider, 1997). Associations between relational aggression and peer rejection have been found in samples of all ages, from preschool children (Crick et al., 1997) to young adults in college (Storch, Werner, & Storch, 2003; Werner & Crick, 1999). Similar to overt aggression, peer rejection among relationally aggressive youth may be related to social-cognitive deficits that play a role in isolating the child from the peer group. Recent studies have shown that, similar to overtly aggressive children, relationally aggressive children exhibit hostile attributional biases that may cause them to respond to social situations with inappropriate aggression, thus increasing the likelihood of rejection by peers (Crick, 1995; Crick, Grotpeter, & Bigbee, 2002). In addition to peer rejection, relational aggression has also been shown to be linked to internalizing problems such as depression and anxiety (Crick, 1997; Crick & Grotpeter, 1995; Pepler & Sedighdeilami, 1998), low self-esteem (Pepler & Sedighdeilami, 1998; Prinstein et al., 2001), externalizing disorders (Crick, 1997; Prinstein et al., 2001), and substance abuse (Storch et al., 2003). Further, Moretti et al. (2001) found that relational aggression was significantly correlated with serious

violent behavior for girls but not for boys. Relational aggression also has been found to be associated with the patterns of inattention, impulsivity, and hyperactivity that characterize Attention-Deficit/Hyperactivity Disorder (ADHD) (Pepler & Sedighdeilami, 1998). Further, Werner and Crick (1999) found that relational aggression was associated with antisocial and borderline personality features, as well as symptoms of bulimia in women. In support of the link between antisocial personality features and relational aggression, a recent study of 10-to 15-year old children found that relational aggression was associated with psychopathic traits, particularly for girls (Marsee, Silverthorn, & Frick, in press).

This research suggests that relational and overt aggression share several social-psychological maladjustment correlates. While these shared correlates could be due to the positive correlation between these types of aggression, many studies have found independent associations (i.e., after controlling for one type of aggression) between aggressive subtypes and adjustment indices. For girls, relational aggression has been shown to explain variance in peer rejection beyond that accounted for by overt aggression (Crick, 1996; Crick & Grotpeter, 1995; Rys & Bear, 1997). In these studies, relational aggression predicted both current peer nominations of rejection and increases in rejection over the course of the school year. For boys, peer rejection was primarily predicted by overt aggression scores, with relational aggression failing to explain additional variance (Rys & Bear, 1997). Relational aggression has also been found to uniquely predict other indices of social maladjustment. Crick and Grotpeter (1995) found that relational aggression was significantly related to self-reported depression, loneliness, and social isolation in children even after co-varying the effects of overt aggression. In one of the first studies to examine relational and overt aggression in an adolescent sample, Prinstein and colleagues (2001) found that after controlling for shared variability among types, both relational

and overt aggression were associated with higher levels of externalizing symptoms (i.e., ODD/CD symptoms). Similar to the peer rejection data reported above, however, relational aggression was found to explain additional variance in externalizing disorders for girls only. Taken together, the above results suggest that while both relational and overt aggression are associated with increased levels of social-psychological adjustment problems, relational aggression may provide unique information for girls beyond that provided by overt aggression.

Reactive Versus Proactive Aggression

Patterns of covariation

Research on the overt form of aggression often makes the distinction between reactive and proactive subtypes. Validation for this distinction has been obtained through factor analyses of teacher (Day, Bream, & Pal, 1992; Dodge & Coie, 1987), parent (Poulin & Boivin, 2000a), and peer ratings of aggression (Salmivalli & Nieminen, 2002). The results of these studies, along with many others (e.g., Dodge, Coie, Pettit, & Price, 1990; Dodge, Lochman, Harnish, Bates, & Pettit, 1997; Price & Dodge, 1989) suggest that reactive and proactive aggression can be reliably distinguished in samples of aggressive children. However, the two types of aggression are moderately to substantially correlated (r s ranging from approximately .40 to .90), suggesting that a large number of children display both types of aggressive behavior. This high degree of overlap is somewhat asymmetrical, though, with research indicating that a number of children display reactive aggression only, while the majority of children who show high levels of proactive aggression are also high in reactive aggression (Brown, Atkins, Osborne, & Milnamow, 1996; Dodge & Coie, 1987; Vitaro, Brendgen, & Tremblay, 2002). Despite the substantial overlap, however, evidence exists for a number of unique characteristics between children in the two aggressive groups. These unique associations have led some researchers to suggest that reactive

and proactive aggression may represent “distinct pathways for antisocial outcomes” (Poulin & Boivin, 2000b, p. 238).

Differential correlates of reactive and proactive aggression

The first important distinction between reactive and proactive aggression is that they seem to differ in terms of developmental course and risk for later problem behavior.

Developmentally, reactive aggression has been shown to be more strongly associated with a history of physical abuse and to have an earlier age of onset than proactive aggression (Dodge et al., 1997; Strassberg, Dodge, Pettit, & Bates, 1994). This type of aggression also seems to be less of a risk factor for later problem behavior than proactive aggression. Several studies have found that proactively aggressive children are more likely than reactively aggressive children to experience externalizing problems in childhood, conduct problems in adolescence, and criminal behavior and alcohol abuse in adulthood (Pulkkinen, 1996; Vitaro, Gendreau, Tremblay, & Oigny, 1998; Vitaro et al., 2002).

Second, reactively and proactively aggressive children differ in terms of social adjustment. Reactively aggressive children show greater school adjustment problems, higher rates of peer rejection, and more peer victimization than proactively aggressive children (Dodge et al., 1997; Poulin & Boivin, 1999; 2000b; Schwartz et al., 1998; Waschbusch, Willoughby, & Pelham, 1998). One reason for these adjustment problems may be that reactively aggressive children often exhibit social problem-solving skill deficits and misinterpret ambiguous behaviors as hostile provocation (Crick & Dodge, 1996; Day et al., 1992; Dodge & Coie, 1987; Dodge, Price, Bachorowski, & Newman, 1990; Hubbard, Dodge, Cillessen, Coie, & Schwartz, 2001). These skill deficits may be linked to poor emotion regulation skills (see Frick & Morris, 2004). In contrast, proactively aggressive children are less rejected and victimized, have more friends,

and are perceived as leaders and having a sense of humor (Dodge & Coie, 1987; Poulin & Boivin, 2000a; Price & Dodge, 1989; Schwartz et al., 1998). Proactively aggressive children are more likely than reactively aggressive children to have friends who are proactively aggressive and who increase the children's own levels of proactive aggression (Poulin & Boivin, 2000b). These deviant peer affiliations may place the proactively aggressive child at increased risk for later antisocial behavior (Moffitt & Caspi, 2001; Patterson & Dishion, 1985). Further, proactively aggressive children seem to perceive aggression to be an effective means to reach their goals that is unlikely to result in punishment (Crick & Dodge, 1996; Dodge et al., 1997; Schwartz et al., 1998).

Finally, reactive and proactive aggression differ in terms of emotional reactivity. Reactively aggressive children are characterized by high rates of temperamental angry reactivity, low frustration tolerance, and a propensity to react with high levels of negative emotion to aversive stimuli (Little et al., 2003; Vitaro et al., 2002; see also Frick & Morris, 2004, for a review). These children exhibit regulatory deficits in both inhibitory and attentional control, as evidenced by high scores measures of impulsivity, hyperactivity, and inattention (Day et al., 1992; Shields & Cicchetti, 1998; Vitaro et al., 2002). Indeed, recent research suggests that reactively aggressive children may be over-represented in children with comorbid Attention Deficit Hyperactivity Disorder (ADHD) and Conduct Disorder (CD) (Dodge et al., 1997; Vitaro et al., 2002; Waschbusch et al., 2002).

The profile of poor attentional and inhibitory control that characterizes reactively aggressive children is especially evident in children who are victims of physical abuse (Shields & Cicchetti, 1998). Studies of maltreated youth have shown that they evidence higher rates of emotion dysregulation (Dodge, Bates, & Pettit, 1990; Shields & Cicchetti, 2001), which appears

to foster mood lability and angry reactivity and to contribute to disruptions in attention (Shields & Cicchetti, 1998). Consistent with a history of abuse and problems in emotional regulation, reactively aggressive children exhibit higher rates of internalizing problems than proactively aggressive children, including symptoms of somatization, depression, and anxiety (Dodge et al., 1997; Vitaro et al., 1998; 2002). These findings have led researchers to suggest that reactive aggression may be more predictive of internalizing problems than proactive aggression (Vitaro et al., 1998).

In contrast, children who are high in proactive aggression do not seem to evidence the same problems in emotional regulation as reactively aggressive children (Crick & Dodge, 1996; Dodge & Coie, 1987; Dodge et al., 1997; Vitaro et al., 2002). Further, proactively aggressive children exhibit fewer internalizing symptoms than reactively aggressive children, and they often show reduced levels of emotional reactivity (i.e., skin conductance and heart rate acceleration) (Hubbard et al., 2002). These findings are consistent with the idea that children who display high levels of proactive aggression (either with or without concurrent reactive aggression), may represent a more severe subgroup of aggressive children that are also high on psychopathic traits (see Frick & Marsee, in press, for a review). In support of this idea, recent findings indicate that proactive aggression is associated with callous and unemotional (CU) traits in children (Frick, Cornell, Barry, Bodin, & Dane, 2003), which is consistent with research on adolescents (Caputo, Frick, & Brodsky, 1999; Kruh, Frick, & Clements, 2005) and adults (Cornell et al., 1996) who are high in psychopathic traits.

Taken together, research comparing proactively and reactively aggressive children suggests that these subtypes are very different with regard to developmental histories, school and social-psychological adjustment, and long-term outcomes. Reactive aggression appears to be

associated with temperament characteristics such as low frustration tolerance and a propensity to react with high levels of negative emotion to aversive stimuli (Little et al., 2003; Vitaro et al., 2002). These temperament characteristics, coupled with physical abuse in early childhood, may lead to later emotional dysregulation and social-cognitive deficits, which in turn may lead to a pattern of hostile and angry responses to real or perceived provocation. This style of angry responding appears to put children at risk for greater peer rejection and victimization, as well as later problems related to depression, anxiety, impulsivity, and inattention. In contrast, proactive aggression appears to be more characterized by positive expectations for aggression and association with peers who perpetuate antisocial behavior. This type of aggression seems to be characterized by a callous and unemotional interpersonal style, which is associated with a more severe pattern of conduct problems (Christian, Frick, Hill, Tyler, & Frazer, 1997) and leads to later delinquency in adolescence and criminal behavior in adulthood (Pulkkinen, 1996; Vitaro et al., 1998; 2002).

Integrating Models of Aggression

Research on the forms and functions of aggression has revealed many important developmental, social, cognitive, and behavioral correlates that provide essential information to those studying aggressive behavior in youth. As is clear from the above discussion, a particularly useful distinction in the aggression literature is that between reactive and proactive aggression. However, one major limitation to research on this distinction is that it has focused almost exclusively on overt or physical forms of aggression. Recently, researchers have begun to suggest that the reactive/proactive distinction may also be useful for describing relationally aggressive youth (Crick et al., 1999b; Crick & Werner, 1998; Little et al., 2003). The differential correlates of reactive and proactive aggression suggest different developmental pathways to

antisocial behavior in youth, and have led some researchers to recommend the implementation of specialized intervention programs that target the differing treatment needs of these groups (Dodge, 1991; Dodge & Coie, 1987; Little et al., 2003). It makes conceptual sense then, that this distinction may also inform treatment decisions for relationally aggressive youth, particularly girls.

In an attempt to integrate the overt/relational and reactive/proactive distinctions into a unified model of aggression, Little and colleagues (2003) developed a self-report instrument designed to differentiate the forms from the functions of aggression. The aggression scale consisted of six internally consistent subscales (pure overt, reactive overt, proactive overt, pure relational, reactive relational, and proactive relational). A confirmatory factor analysis supported the separable dimensions of two overriding forms of aggression (overt and relational), as well as two underlying aggressive functions (reactive and proactive). Further, the latent factors of the four subtypes of aggression showed expected correlations with important outcome measures. For example, relational aggression was positively associated with victimization and negatively associated with social competence, while overt aggression showed an opposite pattern. Also, reactive aggression was positively associated with hostility and low frustration tolerance, while proactive aggression was not related to hostility and was negatively related to frustration intolerance.

Results from Little and colleagues' (2003) study provide initial support for the hypothesis that both relational and overt aggression can be broken down into reactive and proactive subtypes. This was accomplished using a novel scale that addressed many of the limitations of past aggression measures. Specifically, this scale was the first to break down overt and relational forms of aggression into subscales of analogous content measuring reactive and proactive

subtypes. Also, this scale specifically focused on the harm component of aggression, while other scales contain items that do not measure this important defining aspect of aggression (see Brown et al., 1996, for example).

Along with its strengths, however, Little and colleagues' (2003) measure also has certain limitations. Specifically, items on the reactive and proactive subscales are narrowly worded, with all of the proactive items measuring aggression for gain (i.e., "To get what I want, I...") and all of the reactive items measuring aggression as a result of anger (i.e., "When I am mad at others, I..."). While these reasons for aggression are well-supported by past research (e.g., Crick & Dodge, 1996; Dodge et al., 1997; Schwartz et al., 1998; Vitaro et al., 2002), literature on reactive and proactive aggression also supports numerous other characteristics of these subtypes, including aggression for dominance (proactive), aggression for sadistic reasons (proactive), unprovoked and premeditated aggression (proactive), and impulsive, thoughtless aggression (reactive) (see Frick & Marsee, in press, for a review). These aggressive characteristics may be particularly important in the assessment of highly aggressive and/or deviant populations (e.g., adjudicated or incarcerated youth).

A second limitation of Little and colleagues' (2003) study is that, while positing the existence of reactive and proactive subtypes of relational aggression, it did not directly compare these subtypes to equivalent subtypes of overt aggression in order to determine whether they shared similar correlates. Further, this study did not test whether or not the associations of outcome variables with relational aggression were independent of overt aggression. Instead, Little and colleagues formed latent constructs of proactive and reactive aggression and of relational and overt aggression to test their associations with social-psychological outcome variables. While valuable, these results do not address the question of whether or not relational

aggression is actually a manifestation of the same underlying “aggression” construct as overt aggression, a manifestation that shows similar correlates, but is more likely to be characteristic of girls than of boys.

Statement of Problem

Past research suggests that relational aggression is an important construct for the study of child and adolescent development, especially for girls. Relationally aggressive behavior seems to have predictive value over and above overt aggression in terms of social-psychological adjustment in girls, and is associated with many negative outcomes. However, it is unclear whether relational aggression involves the same developmental processes as overt aggression, and therefore it is unclear whether relational aggression is truly a manifestation of the same “aggression” construct as overt aggression. If indeed relational aggression is measuring the same construct as overt aggression (albeit in a different form), then it is reasonable to assume that relational aggression should be able to be broken down into reactive and proactive subtypes as well. Further, the reactive and proactive subtypes of relational aggression should share the same correlates and developmental mechanisms as the reactive and proactive subtypes of overt aggression. The purpose of the current study was to explore these questions in a high-risk sample of girls.

The decision to study a detained sample of girls was based on a number of factors. First, recent statistics show that arrest rates for girls have increased 35% from 1980 to 2000, compared to an 11% decrease among boys for that time period (Snyder, 2002). In addition to an overall increase in crime, rates of violent offending for female youth have significantly increased over the last decade (OJJDP Statistical Briefing Book, 2000). Charges for serious violent crimes such as murder and aggravated assault increased 28% among female youth between 1991 and 2000. A

larger increase was documented for simple assault charges, with a 77% rise between 1991 and 2000 (FBI Uniform Crime Report, 2000). Consistent with official crime data, a recent report from the Surgeon General's Office showed that girls' self-reported aggressive and violent behavior increased significantly between 1983 and 1998 (U.S. Department of Health and Human Services, 2001). These increases in rates of aggression and violence among young girls highlight the need to understand factors that are associated with the manifestation of problem behavior in this population.

Second, girls in the juvenile justice system are likely to have high rates of overall aggression, which could make it easier to detect distinctions between aggressive subtypes. Detained and/or adjudicated girls have been found to have extensive histories of trauma and abuse (see Chamberlain & Moore, 2002), which may contribute to higher rates of reactive aggression (Dodge et al., 1997; Strassberg et al., 1994). Further, the forced intimacy of girls' dorms in juvenile facilities may foster high rates of relational aggression, which often occurs in the context of close-knit peer groups (Lagerspetz et al., 1988).

Third, detained/adjudicated girls have higher rates of mental illness and family dysfunction than boys (Henggeler, Edwards, & Borduin, 1987; McCabe, Lansing, Garland, & Hough, 2002), and their long-term negative outcomes are more diverse (Robins & Price, 1991). Unfortunately, however, much less is known about factors that predict or protect against the development of severe conduct problems and delinquency in girls, resulting in a lack of developmentally based, gender-relevant treatment models for this population (Chamberlain & Moore, 2002).

In addition to the above factors, our decision to focus on girls in this study was based on the literature on relational aggression. Numerous studies have shown that when girls behave

aggressively, they are more likely to use relational aggression than overt aggression (e.g., Crick & Grotpeter, 1995; Lagerspetz et al., 1988). Second, research has shown that girls find this type of aggression to be much more distressing than boys do (Crick, 1995). Finally, several studies have shown that relational aggression predicts negative outcomes (independently of overt aggression) for girls but not for boys (Crick, 1996; Crick & Grotpeter, 1995; Prinstein et al., 2001; Rys & Bear, 1997). Therefore, to initially investigate the distinction between reactive and proactive relational aggression, we decided to focus on a sample of girls.

The current study sought to expand upon past aggression research by examining the reactive and proactive subtypes of relational aggression a sample of detained (i.e., pre-adjudicated) girls. A major goal of this study was to determine whether these subtypes showed a similar pattern of associations as the reactive and proactive subtypes of overt aggression. Figure 1 illustrates a conceptual model integrating the results of past research with the goals of the current study. The figure separates aggression into four quadrants: 1) reactive overt; 2) proactive overt; 3) reactive relational; and 4) proactive relational. Quadrants 1 and 2 show important correlates that have been studied with regard to reactive and proactive overt aggression. The purpose of the current study is to examine similar correlates for reactive and proactive relational aggression (as shown in quadrants 3 and 4). To further this goal, a comprehensive measure of aggression was developed that specifically assesses the four proposed subtypes of aggression (i.e., reactive overt, proactive overt, reactive relational, proactive relational) in youth. This instrument was developed to overcome the limitations of Little et al.'s (2003) measure stated above. Specifically, the proactive subscale was broadened to include not only aggression for gain, but also aggression for dominance (e.g., "When I hurt others, I feel like it makes me powerful and respected"), aggression for sadistic reasons (e.g., "I enjoy hurting others"), and

unprovoked and premeditated aggression (e.g., “I carefully plan out how to hurt others”). The reactive subscale was also expanded to include not only emotionally provoked, angry aggression, but also impulsive, thoughtless aggression (e.g., “Most of the times that I have gotten into arguments or physical fight, I acted without thinking”).

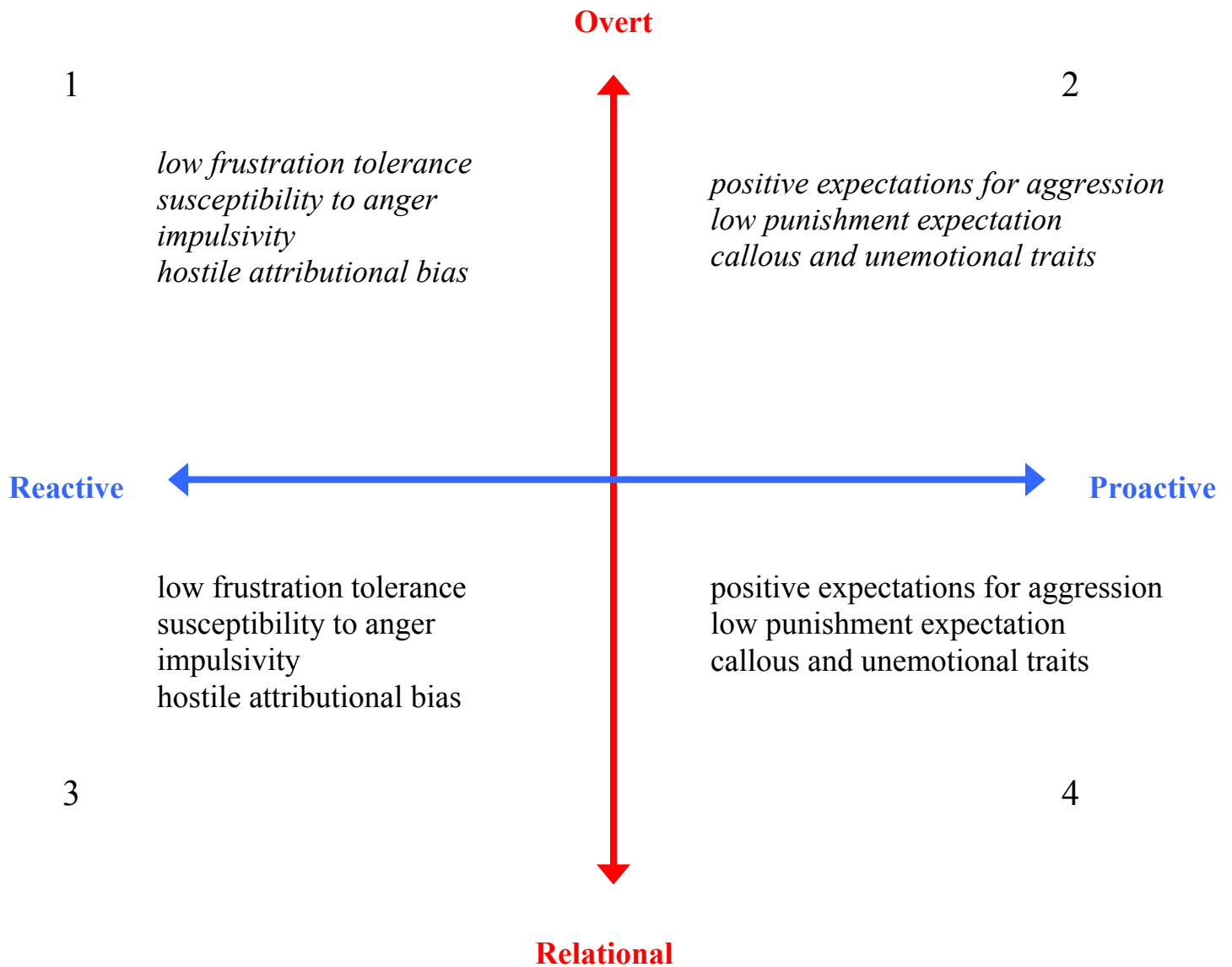


Figure 1. Conceptual model of aggressive subtypes and correlates. Italics indicate portions of the model that have been examined in past research.

Hypotheses

1. We hypothesized that measures of relational aggression would be significantly related to measures of overt aggression and delinquency.
2. We hypothesized that relational aggression could be broken down into reactive and proactive subtypes, resulting in four internally consistent, moderately correlated aggression dimensions.
3. We hypothesized that reactive relational aggression would be associated with emotional dysregulation (i.e., low frustration tolerance, high levels of negative emotion, susceptibility to anger), high levels of impulsivity, and hostile attributional bias.
 - a. We hypothesized that these associations would remain significant when controlling for proactive relational aggression.
 - b. We hypothesized that these associations would remain significant when controlling for overt aggression.
4. We hypothesized that proactive relational aggression would be associated with a callous-unemotional interpersonal style and social-cognitive deficits (i.e., positive outcome expectations and/or low punishment expectations for aggression).
 - a. We hypothesized that these associations would remain significant when controlling for reactive relational aggression.
 - b. We hypothesized that these associations would remain significant when controlling for overt aggression.

Method

Participants

The parents or legal guardians of approximately 82 pre-adjudicated adolescent girls housed in three short-term detention facilities in southeastern Louisiana were contacted by detention center staff and asked for permission for the researcher to contact them for potential participation. The participating detention facilities were locally operated and primarily housed pre-adjudicated youth awaiting trial. Approximately half (51.7%) of the participants were recruited from a facility in a large urban area of the Southeastern United States, while the other half were recruited from two facilities in rural areas. One youth was excluded based on parental report of an educational exceptionality of mild mental retardation and one youth was excluded based on parental refusal to consent. The parents/guardians of 7 youth could not be contacted for consent purposes, and 13 youth were released from detention before the principal investigator could make parental contact. Data were collected for 60 girls; however, 2 participants were excluded from data analysis due to deviant aggression subscale scores (i.e., scores were higher than 3 standard deviations above the mean for the subscale). The final sample consisted of 58 adolescent girls ranging in age from 12 to 18 (Mn = 14.98; SD = 1.30). The self-reported ethnic breakdown of the sample was 77.6% African-American and 22.4% Caucasian, which is largely representative of girls housed in detention centers across the state (Louisiana Youth Services Office of Youth Development, 2004). Based on a review of their institutional records, the majority of participants had at least one prior detention (79.3%). Table 1 contains complete demographic information for the sample.

Table 1

Demographic characteristics of the sample

Variable	Mean (SD)	Range	Frequency	Percent
Age	14.98 (1.30)	12-18	-----	-----
Ethnicity				
Caucasian	-----	-----	13	22.4%
African-American	-----	-----	45	77.6%
SPED				
Yes	-----	-----	5	8.6%
No	-----	-----	53	91.4%
Prior Detentions				
Yes	-----	-----	46	79.3%
No	-----	-----	12	20.7%
# Prior Detentions	1.30 (1.18)	0-4	-----	-----
Age 1 st detention	14.21 (1.34)	12-17	-----	-----

Note. N = 58. SD = standard deviation; SPED = youth was in special education classes.

*Measures**Demographic and Legal Variables.*

Basic demographic (i.e., age, ethnicity) and legal information (i.e., age at first detention, prior detention history, and offense information) was coded from each participant's institutional file. Special education information was obtained via parent report.

Inventory of Callous-Unemotional Traits (ICU; Frick, 2004).

The ICU is a 24-item self-report scale designed to assess callous and unemotional traits in youth. The ICU was derived from the callous-unemotional (CU) scale of the Antisocial Process Screening Device (APSD; Frick & Hare, 2001). The CU component of the APSD has emerged as a distinct factor in both clinic and community samples (Frick, Bodin, & Barry, 2000), and has

been shown to identify a distinct subgroup of children with conduct problems that are more severe than other children with conduct disorder (Christian et al., 1997). However, the self-reported CU scale has demonstrated only moderate internal consistency in past studies (e.g., Loney, Frick, Clements, Ellis, & Kerlin, 2003), which is likely due to its small number of items ($n = 6$) and three-point rating system. Also, 5 out of the 6 items are worded in the same direction, increasing the possibility of response bias. The ICU was developed to overcome these limitations. It was constructed based on a factor analysis of parent and teacher ratings on the APSD, using the four items that loaded significantly on the CU scale in both clinic-referred and community samples (Frick et al., 2000). These four items (“is concerned about the feelings of others,” “feels bad or guilty,” “is concerned about schoolwork,” and “does not show emotions”) were restructured into four positively and four negatively worded items and placed on a four-point scale (0 = “not at all true,” 1 = “somewhat true,” 3 = “very true,” and 4 = “definitely true”). Internal consistency of the ICU in this sample was satisfactory ($\alpha = .79$).

Peer Conflict Scale (PCS; Marsee, Kimonis, & Frick, 2004).

The PCS was developed to assess four categories of aggressive behavior: overt, relational, reactive, and proactive. To develop this scale, all items assessing reactive, proactive, overt, and relational aggression from existing scales, including the Aggressive Behavior Rating Scale (Brown et al., 1996), the Aggressive Subtypes Scale (Dodge & Coie, 1987), the Direct and Indirect Aggression Scales (Björkqvist et al., 1992b), and aggression scales created by Crick and Grotpeter (1995) and Galen and Underwood (1997), were pooled and items that were not clearly related to harm were deleted. Second, items were reworded to ensure that there was direct correspondence between overt and relational items, such that for each reactive overt item there was an analogous reactive relational item, and for each proactive overt item, there was an

analogous proactive relational item. These items were then reviewed by a team of faculty, graduate, and advanced undergraduate students to ensure that the wording was developmentally appropriate. This process led to the creation of a self-report measure including ten items in each of four aggressive subtype categories: proactive overt (“I carefully plan out how to hurt others”), proactive relational (“I gossip about others to become popular”), reactive overt (“If others make me mad, I hurt them”), and reactive relational (“If others make me mad, I tell their secrets”). In addition to these four scales, scores can also be calculated for total aggression, overt aggression, and relational aggression. Internal consistency for the PCS scales in this study was good, with alphas as follows: total aggression = .93; overt aggression = .90; relational aggression = .87; reactive overt = .87; proactive overt = .82; reactive relational = .80; proactive relational = .76.

Impressions of Peer Relations (IPR; Marsee, 2004).

The IPR was developed for use in the current study as an observational measure of overt and relational aggression in youth. The IPR consists of 10 items assessing observed acts of aggression in social interactions. Five items measure overt aggression (“the youth physically hit, pushed, or kicked another youth”) and five items measure relational aggression (“the youth gossiped about another youth”). During the data collection session and the pizza party, the participants were observed by advanced undergraduate research assistants who were trained to recognize both overtly and relationally aggressive behavior among the youth. Immediately following the pizza party, the assistants completed the IPR for each youth. Items on the IPR were coded as yes or no based on whether the specified behavior occurred at least once during the observation period. Internal consistency for the overt aggression scale in the current study was very poor ($\alpha = .23$), due to the low base rate of observed overt aggression in this sample ($Mn = .21$; $SD = .49$). However, internal consistency for the relational aggression scale was satisfactory

($\alpha = .70$). This scale was not significantly correlated with self-report of relational aggression ($r = .20, .13, .23, p = ns$, for total relational, reactive relational, and proactive relational, respectively), but was significantly correlated with self-report of delinquency ($r = .47, .44, .44, p < .01$, for total, non-violent, and violent delinquency, respectively).

Self-Report of Delinquency (SRD; Elliott, Huizinga, & Ageton, 1985).

The SRD is a 36-item structured interview that assesses delinquent behavior in youth. For each of 36 delinquent acts (e.g., destroying property, stealing, carrying weapons, selling drugs, hitchhiking, physical fighting, rape, alcohol and drug use) the youth is asked (a) whether or not he or she has ever engaged in the stated problem behavior, (b) the number of times he or she has engaged in the behavior, and (c) the age at which he or she first engaged in the behavior. The SRD total score, which indicates how many illegal acts were committed at least once during the past 12 months, has demonstrated good internal consistency in past studies ($\alpha = .88$ for boys and $.82$ for girls) (Krueger et al., 1994). Further, Krueger and colleagues reported significant correlations between the SRD and informant report of delinquency (i.e., friends or family who reported on youth's antisocial behavior during the past 12 months) ($r = .48, p < .01$), police contacts ($r = .42, p < .01$), and court convictions ($r = .36, p < .01$). For the purposes of the current study, a 25-item nonviolent delinquency scale was used. Two items ("Have you ever had sexual intercourse?" and "Have you ever used heroin?") were removed from the original scale due to lack of variance among respondents' answers. The violent delinquency scale used in this study consisted of six items, with three items removed due to lack of variance ("Have you ever hit other students?" and "Have you ever had sexual relations with someone against their will?") or very poor item-total correlation ("Have you ever hit your parents?"). Internal consistency for

the delinquency scales in the current study were fair to good ($\alpha = .90$ for total delinquency, .88 for non-violent, and .64 for violent).

Abbreviated Dysregulation Inventory (ADI; Mezzich, Tarter, Giancola, & Kirisci, 2001).

The Abbreviated Dysregulation Inventory (ADI) is a 30-item self-report measure designed to assess 3 aspects of dysregulation (emotional/affective, behavioral, and cognitive) in adolescents. The Emotional/Affective Dysregulation subscale consists of 10 items that measure components of emotional dysregulation such as susceptibility to emotional arousal, irritability, and negative affectivity. The Behavioral Dysregulation subscale consists of 10 items that measure behavioral impulsivity, hyperactivity, and sensation-seeking. The Cognitive Dysregulation subscale consists of 10 items that measure thinking and planning behavior, goal-directedness, task persistence, and the ability to learn from mistakes. Each item is rated on a 4-point scale from 0 (never true) to 3 (always true). The ADI is a shortened version of the original Dysregulation Inventory (DI) and was formed using Item Response Theory to narrow down the DI's original 92 items. The author chose the items with the highest discriminant coefficients for inclusion in the ADI (A. C. Mezzich, personal communication, July 19, 2004). The DI scales have demonstrated concurrent validity in past research, as evidenced by their significant correlations with established measures of emotional and behavioral distress and IQ/achievement scores (Mezzich et al., 2001). The DI scales have also demonstrated good internal consistency ($\alpha = .88$ for affective, .92 for behavioral, and .71 for cognitive), split-half reliability ($R = .86$ for affective, .81 for behavioral, and .68 for cognitive), and inter-rater reliability (i.e., between child and parent; ICC = .23 for affective, .29 for behavioral, and .18 for cognitive) in previous samples of youth (Mezzich et al., 2001). The ADI scales used in the current study showed moderate

internal consistency ($\alpha = .75$ for emotional/affective dysregulation, $.84$ for behavioral dysregulation, and $.77$ for cognitive dysregulation).

Adolescent Stories (Conduct Problems Prevention Research Group, 1999).

The Adolescent Stories measure is a social-cognitive interview that assesses adolescents' attributional tendencies (hostile or benign) in response to ambiguous provocation. This version of Adolescent Stories was modified to include both overt and relational provocation situations. The current measure consists of eight hypothetical stories in which youth find themselves targets of ambiguous provocation by a peer. Four of the vignettes describe overt provocation (e.g., books knocked on the floor by another student), and four describe relational provocation (e.g., not being invited to a party). Youth are asked to rate the likelihood that the antagonist in the vignette had hostile or benign intent (on a 5-point scale, from not at all likely to very likely), and also to rate how angry they would feel in this situation (on a 5-point scale, from not at all to very angry). Scoring for Adolescent Stories is based on summary scores (computed by averaging items across stories) for each subscale. For the purposes of the current study, only the hostile attribution and susceptibility to anger subscales were used. These scales have demonstrated moderate internal consistency in previous research ($\alpha = .71$ and $.75$ for hostile attribution and susceptibility to anger scales, respectively) (Godwin & Maumary, 2004). Internal consistency for these scales in the current study was moderate ($\alpha = .77$ and $.68$ for hostile attribution and susceptibility to anger scales, respectively).

Outcome Expectations Questionnaire (OEQ; Pardini et al., 2003).

This version of the Outcome Expectations Questionnaire (OEQ; Perry, Perry, & Rasmussen, 1986) consists of eight brief vignettes designed to measure adolescents' expectations that aggressive behavior against a same-sex peer will result in various outcomes. In the vignettes,

participants are asked to imagine using overtly or relationally aggressive behavior to either obtain a tangible reward from a peer (e.g., physically threatening a peer to get something from her) or retaliate against aversive treatment from a peer (e.g., writing a mean note about a peer because she has been gossiping about you). Four of the vignettes depict overtly aggressive situations and four vignettes depict relationally aggressive situations. The relational aggression vignettes were modeled after those used in Goldstein and Tisak (2004). After reading each vignette, participants are asked to rate the likelihood that various outcomes will occur on a 4-point scale, with 1 indicating that the participant is “very sure” that the outcome will not occur, 2 indicating that the participant is “pretty sure” that the outcome will not occur, 3 indicating that the participant is “pretty sure” that the outcome will occur, and 4 indicating that the participant is “very sure” that the outcome will occur. For each vignette, participants are asked to rate the likelihood that they will successfully obtain the desired object/ reduce aversive treatment (depending on the goal depicted in the vignette), be punished for their actions, and gain a sense of dominance over their peer. Similar scales have been shown to successfully differentiate between aggressive/nonaggressive and antisocial/control youth (Hall, Herzberger, Skrowronski, 1998; Perry et al., 1986). Further, delinquent adolescents with CU traits have been shown to have the tendency to overestimate the rewarding aspects and underestimate the punishing aspects of aggression (Pardini et al., 2003). The internal consistencies of the outcome expectation subscales were variable in past studies ($\alpha = .56-.83$) (Pardini et al., 2003). For the purposes of the current study, only the positive outcome expectation and punishment expectation scales were used. Internal consistency for these scales was moderate to good ($\alpha = .65$ and $.80$ for positive outcome expectation and punishment expectation, respectively).

In order to reduce the possibility of agitation due to the negative nature of the vignettes, two positive vignettes were added at the end of this measure. These vignettes illustrate instances of prosocial behavior, and ask the participant to rate happiness and gratitude. These vignettes were included solely for the purpose of reducing possible discomfort, and were not scored or used for data analysis.

Procedure

Prior to the initiation of the study, all procedures were approved by the Institutional Review Board (IRB) at the University of New Orleans, which included a prisoner representative from the Juvenile Justice Project of Louisiana. Adolescent girls were recruited from three detention centers in southeastern Louisiana. Prior to data collection, a telephone informed consent procedure was conducted with the parents of potential participants. The researcher contacted parents via telephone, gave a description of the study, and read an informed consent form. The consent form included information regarding the basic procedures of the study, the voluntary nature of participation, risks and benefits associated with study participation, and the terms of confidentiality. Parents were then asked whether they agreed to allow their child to participate in the study. Upon agreement, the researcher asked parents if they would allow their consent to be audiotaped. All parents agreed, and a tape recording device was connected to the telephone to record verbal parental consent. Following verbal consent procedures, hard copies of all consent forms were mailed to parents.

Procedures for youth assent were implemented individually with each youth. The researcher read an assent form (written at a 7th grade reading level) to potential participants describing the basic procedures of the study, the voluntary nature of participation, risks and benefits associated with the study, and the terms of confidentiality. Youth were informed that

refusal to participate would not result in any disciplinary action. They were also informed that the information they provided would be used for research purposes only. Finally, potential participants were allowed to ask questions about the study before agreeing to participate. After obtaining parental consent and youth assent, the principal investigator administered the questionnaires to participants during small group sessions (3-8 participants per group). All questionnaires were read to all participants in order to control for potential reading level differences. Additionally, at least one trained undergraduate research assistant was present during data collection. Assistants were trained to answer any questions that the participants had, to ensure that participants understood the questionnaires and weren't skipping ahead, and to ensure that participants did not look around at others' papers during the session. Before scoring the questionnaires, an institutional file review was conducted to gather demographic and criminal history information for each participant. Upon completion of the group sessions, participants were rewarded with a pizza party, during which the IPR was conducted. Youth who completed the study were re-contacted at the detention facility within one week in order to answer any questions regarding the study.

Results

Table 2 reports the means, standard deviations, and alpha levels of the main study variables and Table 3 reports their associations with demographic variables.

Table 2

Means, standard deviations, and internal consistency of main study variables

Variable	Mean (SD)	Min-Max	Alpha
<u>Aggression</u>			
Total	30.58 (17.54)	4-76	.93
Overt	18.61 (10.38)	1-44	.90
Reactive	14.66 (7.05)	1-27	.87
Proactive	3.95 (4.31)	0-17	.82
Relational	11.97 (8.44)	0-32	.87
Reactive	7.78 (5.14)	0-22	.80
Proactive	4.19 (4.15)	0-18	.76
Observation Relational	1.38 (1.42)	0-5	.70
<u>Delinquency</u>			
Total	13.41 (6.99)	2-28	.90
Non-violent	11.33 (5.89)	1-23	.88
Violent	2.09 (1.50)	0-5	.64
<u>Social/Behavioral/Emotional</u>			
Hostile Attributional Bias	26.09 (6.64)	8-36	.77
Susceptibility to Anger	27.60 (4.99)	16-38	.68
Emotional Dysregulation	18.62 (5.68)	7-30	.75
Behavioral Dysregulation	17.09 (6.72)	1-30	.84
Cognitive Dysregulation	10.67 (5.33)	0-22	.77
CU Traits	23.50 (9.17)	5-45	.79
Positive Expectation	21.47 (4.92)	8-30	.65
Punishment Expectation	19.12 (5.03)	8-30	.80

Note. N = 58; Min = minimum; Max = maximum; CU = callous-unemotional.

Table 3

Correlations between demographic variables and main study variables

Variable	Age	Ethnicity†	# Prior Detentions	Age 1 st Detention
<u>Aggression</u>				
Total	-.03	-.08	-.11	-.24
Overt	-.04	-.07	-.05	-.27
Reactive	-.10	-.07	-.01	-.21
Proactive	.07	-.06	-.12	-.31
Relational	-.02	-.08	-.17	-.18
Reactive	-.07	-.06	-.14	-.25
Proactive	.06	-.09	-.18	-.06
Observation Relational	.09	-.09	-.21	.24
<u>Delinquency</u>				
Total	.07	-.26*	-.32	-.07
Non-violent	.09	-.33*	-.33*	.00
Violent	-.03	.09	-.23	-.29
<u>Social/Behavioral/Emotional</u>				
Hostile Attributional Bias	.13	-.31*	.06	-.02
Susceptibility to Anger	-.02	-.32*	-.11	-.03
Emotional Dysregulation	-.14	-.09	-.01	-.18
Behavioral Dysregulation	-.21	-.11	-.11	-.18
Cognitive Dysregulation	-.00	-.32	.06	.04
CU Traits	-.03	-.20	-.20	-.07
Positive Expectation	.18	-.12	.21	.04
Punishment Expectation	.08	.30	.30	-.03

Note. † 1 = Caucasian; 2 = African-American; CU = callous-unemotional.

There were no significant associations between age and any of the main study variables.

However, age at first detention showed moderate negative correlations with self-report of both relational and overt aggression, indicating more aggression being associated with a younger age at first detention. Ethnicity was significantly associated with a few variables. Specifically,

Caucasian girls reported higher levels of both total and non-violent delinquency than African-American girls. Further, Caucasian girls reported more anger and higher levels of hostile attributional bias, as well as higher levels of cognitive dysregulation. Finally, African-American girls reported higher levels of punishment expectation (i.e., the expectation that they will be punished for aggressive behavior) than Caucasian girls.

Hypothesis 1 stated that measures of relational aggression would be significantly related to measures of overt aggression and delinquency. In order to test this hypothesis, zero-order correlations between the main study variables were calculated and are reported in Table 4.

Table 4

Correlations between aggression and delinquency variables

Variable	TR	RR	PR	OR	TO	RO	PO
<u>Aggression</u>							
Total Relational	-	.93***	.89***	.19	.73***	.60***	.78***
Reactive Relational	.93***	-	.65***	.13	.65***	.56***	.66***
Proactive Relational	.89***	.65***	-	.23	.68***	.54***	.76***
Total Overt	.73***	.65***	.68***	.05	-	.95***	.86***
Reactive Overt	.60***	.56***	.54***	.03	.95***	-	.65***
Proactive Overt	.78***	.66***	.76***	.06	.86***	.65***	-
<u>Delinquency</u>							
Total	.46***	.39**	.46***	.47***	.42**	.38**	.39**
Non-violent	.42**	.34**	.43**	.44**	.37**	.34*	.33*
Violent	.51***	.46***	.46***	.44***	.53***	.47***	.50***

Note. TR = total relational; RR = reactive relational; PR = proactive relational; OR = observation relational; TO = total overt; RO = reactive overt; PO = proactive overt.

* $p < .05$

** $p < .01$

*** $p < .001$

These analyses indicated that self-reported relational aggression was significantly correlated with self-reported overt aggression ($r = .73, .60, \text{ and } .78, p < .001$, for total overt, reactive overt, and proactive overt, respectively) and with self-reported delinquency ($r = .46, .42, \text{ and } .51, p < .01$ for total, nonviolent, and violent delinquency, respectively). Correlations with observed relational aggression also revealed significant associations with delinquency ($r = .47, .44, \text{ and } .44, p < .01$, for total, nonviolent, and violent delinquency, respectively). However, correlations

between observed relational aggression and self-reported relational aggression ($r = .19, .13,$ and $.23, p = ns,$ for total relational, reactive relational, and proactive relational, respectively) and between observed relational aggression and self-reported overt aggression ($r = .05, .03,$ and $.06, p = ns,$ for total overt, reactive overt, and proactive overt, respectively) were not statistically significant (see Table 4).

Hypothesis 2 stated that, similar to overt aggression, relational aggression could be broken down into reactive and proactive subtypes, resulting in four internally consistent, moderately correlated aggression dimensions. To test this hypothesis, four aggression subscales (i.e., reactive overt, proactive overt, reactive relational, and proactive relational) were created based on the girls' self-report of aggression. As indicated in Table 2, these subscales demonstrated good internal consistency ($\alpha = .76 -.87$). Further, the four aggression subscales were significantly correlated both within ($r = .65, p < .001$ for reactive overt and proactive overt; $r = .65 p < .001$ for reactive relational and proactive relational) and across (see Table 4) overt and relational aggression dimensions.

Hypothesis 3 predicted that reactive relational aggression would be associated with emotional dysregulation (i.e., low frustration tolerance, high levels of negative emotion, susceptibility to anger), high levels of impulsivity, and hostile attributional bias. In order to test this hypothesis, zero-order correlations were calculated and are reported in Table 5.

Table 5

Correlations between aggression and dependent variables

Variable	TR	RR	PR	OR	TO	RO	PO
Emotional Dysregulation	.20	.24	.12	.29*	.32*	.42**	.09
Behavioral Dysregulation	.40**	.38**	.34*	.40**	.39**	.40**	.27*
Cognitive Dysregulation	.18	.13	.21	.15	.19	.14	.23
Susceptibility to Anger	.44**	.42**	.37**	.40**	.47***	.46***	.37**
Hostile Attributional Bias	.08	.06	.09	.31*	.11	.14	.03
CU Traits	.47***	.39**	.48***	.45***	.34*	.26*	.38**
Positive Expectation	.20	.15	.23	.32*	.26*	.20	.31*
Punishment Expectation	-.48***	-.44**	-.43**	-.16	-.47***	-.41**	-.47***

Note. TR = total relational; RR = reactive relational; PR = proactive relational; OR = observation relational; TO = total overt; RO = reactive overt; PO = proactive overt; CU = callous-unemotional

* $p < .05$

** $p < .01$

*** $p < .001$

These analyses indicated that reactive relational aggression was significantly correlated with self-reported behavioral dysregulation (i.e., impulsivity, hyperactivity, sensation-seeking) ($r = .38, p < .01$) and with self-reported susceptibility to anger ($r = .42, p < .01$). Further, the association between reactive relational aggression and emotional dysregulation approached significance ($r = .24, p = .07$). However, the correlations between reactive relational aggression and hostile attributional bias ($r = .06, p = ns$) and reactive relational aggression and cognitive dysregulation ($r = .13, p = ns$) were not statistically significant (see Table 5). Although not broken down into reactive and proactive subtypes, observed relational aggression was

significantly associated with emotional dysregulation, behavioral dysregulation, susceptibility to anger, and hostile attributional bias (see Table 5 for correlations).

Hypothesis 3a predicted that the associations between reactive relational aggression and measures of emotional dysregulation, impulsivity, and hostile attributional bias would remain significant when controlling for proactive relational aggression. To test this hypothesis, two separate sets of regression analyses (Sets 1 and 2; see Table 6) were conducted using the relational aggression dimensions as predictors and the five indicators of emotional, behavioral, and cognitive dysfunction as dependent variables (i.e., emotional dysregulation, behavioral dysregulation, cognitive dysregulation, susceptibility to anger, and hostile attributional bias). Due to the large correlations between the predictor variables, possible multicollinearity among the variables was examined for all regression analyses by calculating variance inflation factor (VIF) and tolerance values. Tolerance represents the proportion of variability in an independent variable not explained by other independent variables, whereas VIF indicates whether the proportion of variability in an independent variable has been exaggerated due to multicollinearity (Allison, 1999). In general, these values did not indicate problematic levels of multicollinearity, as all VIFs were less than 2.50 and all tolerance values were greater than .40, which are considered acceptable values (Allison, 1999). In the first set of regression analyses (Set 1; Table 6), reactive relational aggression was entered alone as a predictor, and in the second set (Set 2; Table 6), reactive relational aggression and proactive relational aggression were entered simultaneously. As predicted, reactive relational aggression accounted for unique variance in susceptibility to anger ($\beta = .32, p < .05$), independent of the variance accounted for by proactive relational aggression. Contrary to predictions, reactive relational aggression did not account for unique variance in the other dependent variables after the addition of proactive relational

aggression (see Table 6 for standardized Betas). However, the standardized Betas for reactive relational aggression (controlling for proactive relational aggression) in the prediction of emotional dysregulation ($\beta = .29, p = .10$) and behavioral dysregulation ($\beta = .28, p = .08$) approached significance.

To further test the difference between reactive and proactive relational aggression in their association with measures of emotional, behavioral, and cognitive functioning, difference scores between the standardized Betas for the second set of regression analyses (Set 2; see Table 6) were calculated using the test for differences in dependent correlations (Bruning & Kintz, 1977). The Betas for reactive relational aggression and proactive relational aggression in the prediction of emotional dysregulation were significantly different ($t(55) = 2.68, p < .01$) and in the expected direction (i.e., reactive relational more associated than proactive relational). The standardized Betas for reactive and proactive relational aggression in the prediction of behavioral dysregulation, cognitive dysregulation, susceptibility to anger, and hostile attributional bias were not significantly different.

Additional regression analyses were conducted in order to replicate past findings regarding the predictive power of reactive overt aggression over and above proactive overt aggression in predicting emotional dysregulation, impulsivity, and social-cognitive deficits such as hostile attributional bias. In the fourth set of regression analyses (Set 4; Table 6), reactive overt aggression was entered alone as a predictor, and in the fifth set (Set 5; Table 6), reactive overt aggression and proactive overt aggression were entered simultaneously. Consistent with past research (Day et al., 1992; Little et al., 2003; Vitaro et al., 2002), reactive overt aggression accounted for unique variance in emotional dysregulation ($\beta = .64, p < .001$), behavioral dysregulation ($\beta = .39, p < .05$), and susceptibility to anger ($\beta = .37, p < .05$), over and above the

variance accounted for by proactive overt aggression (see Table 6). Reactive overt aggression did not account for unique variance in cognitive dysregulation or hostile attributional bias.

To further test the difference between reactive and proactive overt aggression in their association with measures of emotional, behavioral, and cognitive dysfunction, difference scores were calculated between the standardized Betas for the fifth set of regression analyses (Set 5; see Table 6). The Betas for reactive overt aggression and proactive overt aggression in the prediction of emotional dysregulation ($t(55) = 3.62, p < .001$), behavioral dysregulation ($t(55) = 3.78, p < .001$), cognitive dysregulation ($t(55) = 2.15, p < .05$), and susceptibility to anger ($t(55) = 2.32, p < .05$) were significantly different, indicating that reactive and proactive overt aggression show divergent associations with these variables (see Table 6 for standardized Betas). These divergent associations were all in the expected direction (i.e., reactive overt more associated than proactive overt), with the exception of the association with cognitive dysregulation, which showed divergence in the opposite direction (i.e., proactive more associated than reactive). The standardized Betas for reactive and proactive overt aggression in the prediction of hostile attributional bias were not significantly different.

Hypothesis 3b predicted that the associations between reactive relational aggression and measures of emotional dysregulation, impulsivity, and hostile attributional bias would remain significant when controlling for overt aggression. To test this hypothesis, an additional set of regression analyses was conducted entering reactive relational aggression and reactive overt aggression simultaneously (Set 3; see Table 6). Reactive relational aggression did not account for unique variance in the dependent variables after the addition of reactive overt aggression, suggesting that much of the variance was accounted for by shared variance among relational and overt aggression dimensions (see Table 6). However, the standardized Beta for reactive relational

aggression (controlling for reactive overt aggression) in the prediction of susceptibility to anger ($\beta = .24, p = .09$) approached significance.

Table 6

Test of correlates to reactive aggression

Aggression Variable	Dependent Variables†				
	ED	BD	CD	ANG	HAB
<u>Relational</u>					
<u>Set 1</u>					
Reactive Relational	.24	.38**	.13	.42**	.06
R²	.06	.15**	.02	.18**	.00
<u>Set 2</u>					
Reactive Relational	.29 ^a	.28	-.01	.32*	-.00
Proactive Relational	-.07 ^a	.15	.22	.17	.10
R²	.06	.16	.04	.19	.01
<u>Set 3</u>					
Reactive Relational	.01	.23	.08	.24	-.02
Reactive Overt	.42**	.27	.09	.32*	.15
R²	.18**	.20	.02	.25*	.02
<u>Overt</u>					
<u>Set 4</u>					
Reactive Overt	.42**	.40**	.14	.46***	.14
R²	.18**	.16**	.02	.21***	.02
<u>Set 5</u>					
Reactive Overt	.64*** ^b	.39* ^c	-.02 ^d	.37* ^e	.20
Proactive Overt	-.33* ^b	.02 ^c	.25 ^d	.13 ^e	-.09
R²	.24*	.16	.05	.22	.02

Note. ED = emotional dysregulation; BD = behavioral dysregulation; CD = cognitive dysregulation; ANG = susceptibility to anger; HAB = hostile attributional bias. †non-bolded values are standardized betas; Betas sharing like superscripts are significantly different.

^a $t(55) = 2.68^{**}$ ^b $t(55) = 3.62^{***}$ ^c $t(55) = 3.78^{***}$ ^d $t(55) = 2.15^*$ ^e $t(55) = 2.32^*$

* $p < .05$

** $p < .01$

*** $p < .001$

Hypothesis 4 predicted that proactive relational aggression would be associated with a callous-unemotional interpersonal style and social-cognitive deficits such as positive outcome

expectations and/or low punishment expectations for aggression. In order to test this hypothesis, zero-order correlations were calculated and are reported in Table 5. These analyses indicated that proactive relational aggression was significantly correlated with self-reported CU traits ($r = .48$, $p < .001$) and with punishment expectation ($r = -.43$, $p < .01$). Also, the association between proactive relational aggression and positive outcome expectation approached significance ($r = .23$, $p = .09$). Although not broken down into reactive and proactive subtypes, observed relational aggression was significantly associated with CU traits and positive outcome expectation (see Table 5 for correlations).

Hypothesis 4a predicted that the associations between proactive relational aggression and measures of CU traits, positive outcome expectations, and low punishment expectations for aggression would remain significant when controlling for reactive relational aggression. To test this hypothesis, two separate sets of regression analyses (Sets 1 and 2; see Table 7) were conducted using the relational aggression dimensions as predictors and CU traits, positive outcome expectation, and punishment expectation as dependent variables. In the first set of regression analyses (Set 1; Table 7), proactive relational aggression was entered alone as a predictor, and in the second set (Set 2; Table 7), proactive relational aggression was entered simultaneously with reactive relational aggression. As predicted, proactive relational aggression accounted for unique variance in CU traits after the addition of reactive relational aggression ($\beta = .39$, $p < .05$). However, proactive relational aggression did not account for unique variance in the prediction of positive outcome expectation or punishment expectation after the addition of reactive relational aggression (see Table 7).

To further test the difference between proactive and reactive relational aggression in their association with measures of CU traits, positive outcome expectations, and low punishment

expectations for aggression, difference scores between the standardized Betas for the second set of regression analyses (Set 2; see Table 7) were calculated using the test for differences in dependent correlations (Bruning & Kintz, 1977). The Betas for proactive relational aggression and reactive relational aggression in the prediction of CU traits ($t(55) = 2.44, p < .05$) and positive outcome expectation for aggression ($t(55) = 1.94, p < .05$) were significantly different and in the expected direction (i.e., proactive relational more associated than reactive relational), indicating that proactive and reactive relational aggression show divergent associations with these variables (see Table 7 for standardized Betas). The standardized Betas for proactive and reactive relational aggression in the prediction of punishment expectation were not significantly different.

Additional regression analyses were conducted in order to replicate past findings regarding the predictive power of proactive overt aggression over and above reactive overt aggression in predicting CU traits, positive outcome expectations, and low punishment expectations for aggression. In the fourth set of regression analyses (Set 4; Table 7), proactive overt aggression was entered alone as a predictor, and in the fifth set (Set 5; Table 7), proactive overt aggression and reactive overt aggression were entered simultaneously. Consistent with past research (Dodge et al, 1997; Frick et al., 2003), proactive overt aggression accounted for unique variance in CU traits ($\beta = .37, p < .05$) and punishment expectation ($\beta = -.36, p < .05$), independent of the variance accounted for by reactive overt aggression (see Table 7). Also, the standardized Beta for proactive overt aggression (controlling for reactive overt aggression) in the prediction of positive outcome expectation for aggression ($\beta = .32, p = .06$) approached significance.

To further test the difference between proactive and reactive overt aggression in their association with measures of CU traits, positive outcome expectations, and low punishment expectations for aggression, difference scores were calculated between the standardized Betas for the fifth set of regression analyses (Set 5; see Table 7). The Betas for proactive overt aggression and reactive overt aggression in the prediction of CU traits ($t(55) = 3.52, p < .001$) and positive outcome expectation for aggression ($t(55) = 3.02, p < .01$) were significantly different (see Table 7 for standardized Betas) and were in the expected direction (i.e., proactive overt more associated than reactive overt). Also, the difference between the standardized Betas for proactive and reactive overt aggression in the prediction of punishment expectation ($t(55) = 1.81, p = .07$) approached significance.

Hypothesis 4b predicted that the associations between proactive relational aggression and measures of CU traits, positive outcome expectations, and low punishment expectations for aggression would remain significant when controlling for overt aggression. To test this hypothesis, an additional set of regression analyses was conducted entering proactive relational aggression and proactive overt aggression simultaneously (Set 3; see Table 7). In support of this hypothesis, proactive relational aggression accounted for unique variance in CU traits after the addition of proactive overt aggression ($\beta = .44, p < .05$). However, proactive relational aggression did not account for unique variance in positive outcome expectation or punishment expectation, suggesting that much of the variance associated with these variables was accounted for by shared variance among relational and overt aggression dimensions (see Table 7).

Table 7

Test of correlates to proactive aggression

Aggression Variable	Dependent Variables†		
	CU	PEX	PUN
Relational			
<u>Set 1</u>			
Proactive Relational	.48***	.23	-.43**
R²	.23***	.05	.18**
<u>Set 2</u>			
Proactive Relational	.39* ^a	.22 ^b	-.25
Reactive Relational	.14 ^a	.01 ^b	-.27
R²	.24	.05	.23
<u>Set 3</u>			
Proactive Relational	.44*	-.03	-.16
Proactive Overt	.05	.34	-.35
R²	.23	.10	.24
Overt			
<u>Set 4</u>			
Proactive Overt	.38**	.31*	-.47***
R²	.15**	.10*	.22***
<u>Set 5</u>			
Proactive Overt	.37* ^c	.32 ^d	-.36*
Reactive Overt	.02 ^c	-.01 ^d	-.17
R²	.15	.10	.24

Note. CU = callous-unemotional traits; PEX = positive expectation for aggression; PUN = punishment expectation for aggression. †non-bolded values are standardized betas. Betas sharing like superscripts are significantly different.

^a $t(55) = 2.44^*$ ^b $t(55) = 1.94^*$ ^c $t(55) = 3.52^{***}$ ^d $t(55) = 3.02^{**}$

* $p < .05$

** $p < .01$

*** $p < .001$

Discussion

The results of the current study support past research suggesting that relational aggression is associated with higher rates of overt aggression and delinquency in youth (e.g., Crick, 1996; Moretti et al., 2001; Prinstein et al., 2001). These results are particularly interesting given that our sample consisted of high-risk adolescent girls involved in the juvenile justice system, while most past studies of relational aggression studied normative samples of girls. Notable exceptions are studies by Moretti and colleagues (2001) and Chamberlain and Moore (2002) showing that high-risk girls who use relational aggression are also likely to engage in other forms of serious overt aggression and violence. Consistent with those studies, the current results suggest that relational aggression may be an important construct to consider when serving girls in the juvenile justice system, especially when developing intervention and treatment plans.

Also noteworthy in the current study is the fact that self-reported delinquency was associated, not only with self-reported relational aggression, but also with observed relational aggression. These results are novel and add to the scarce literature on the reliability and validity of observational measures of relational aggression. Past studies using observational measures of relational aggression with preschool children have found evidence for the relational/overt aggression distinction, as well as gender differences in observed relational aggression (McNeilly-Choque, Hart, Robinson, Nelson, & Olsen, 1996; Ostrov & Keating, 2004). The current results expand on these findings, indicating that observational measures of relational aggression may also be useful in high-risk adolescent samples. Further, using observational measures when assessing the association between relational aggression and self-reported behavior (e.g., delinquency), reduces the likelihood that associations are solely due to shared method variance.

Interestingly, self-reported relational aggression was not significantly associated with observed relational aggression in this study. Past studies have resulted in mixed findings when comparing observed relational aggression to other-reported (i.e., teacher and peer) relational aggression, with some evidence suggesting convergence between multiple methods (Ostrov & Keating, 2004) and some evidence suggesting very poor correspondence between observed and teacher/peer ratings (McNeilly-Choque et al., 1996). Based on these results and the possibility of response bias (i.e., social desirability), our lack of convergence between self-reported and observed ratings of relational aggression is not surprising. It may be that although the girls in our study clearly engaged in relationally aggressive behavior in their social interactions with others, they were hesitant to report on behaviors they viewed as sneaky or cowardly (Crick & Grotpeter, 1995).

Importantly, observed relational aggression was significantly associated with emotional dysregulation, behavioral dysregulation, susceptibility to anger, hostile attributional bias, CU traits, and positive outcome expectations for aggression (see Table 5). Interestingly, for three of these variables (i.e., emotional dysregulation, hostile attributional bias, and positive outcome expectations), observed relational aggression showed significant associations, whereas self-reported relational aggression did not. These results suggest that measuring relational aggression through observation may add unique information regarding the construct of relational aggression and its association with social-psychological adjustment variables, beyond that accounted for by measuring relational aggression through self-report alone. Further, the pattern of associations between observed relational aggression and two variables (emotional dysregulation and positive outcome expectation) was similar to the pattern of associations between self-reported overt aggression and these variables. These results suggest that girls who act overtly aggressive in

some situations may use relational aggression in situations that prevent the occurrence of overt aggression (e.g., in a detained setting).

One primary goal of the present study was to provide evidence for the idea that relational aggression, similar to overt aggression, could be broken down into reactive and proactive subtypes. To test this hypothesis, we created a comprehensive self-report aggression measure designed to capture both the “forms” (i.e., overt and relational) and the “functions” (i.e., reactive and proactive) of aggressive behavior. Results from this study replicated findings from Little et al. (2003) suggesting that both overt and relational aggression can be manifested either reactively or proactively. Specifically, we were able to create four internally consistent scales (i.e., reactive overt, proactive overt, reactive relational, proactive relational) that were moderately correlated both within and across relational and overt aggression dimensions.

Unlike Little and colleagues (2003), however, the current study sought to further validate the reactive and proactive subtypes of relational aggression by testing their divergent associations with important personality, behavioral, emotional, and social-cognitive correlates. Specifically, we examined whether the differential correlates of reactive and proactive overt aggression showed the same pattern of divergence for reactive and proactive relational aggression. Reactive overt aggression has been found to be associated with temperament characteristics such as low frustration tolerance and high levels of negative emotionality (Little et al., 2003; Vitaro et al., 2002). It is thought that these temperament characteristics lead to later emotional dysregulation, impulsivity, and social-cognitive deficits, such as hostile attributional bias (Crick & Dodge, 1996). In contrast, proactive overt aggression appears to be more associated with positive expectations for aggression and the expectation that punishment is unlikely to result from aggressive behavior (Pardini et al., 2003). This type of aggression also

seems to be characterized by a callous and unemotional interpersonal style (Frick et al., 2003), which is associated with a more severe pattern of conduct problems (Christian et al., 1997) and leads to later delinquency in adolescence and criminal behavior in adulthood (Pulkkinen, 1996; Vitaro et al., 1998; 2002).

Results from the current study support the idea that reactive and proactive relational aggression show divergent correlates, similar to reactive and proactive overt aggression. Consistent with past research on reactive overt aggression (e.g., Day et al., 1992; Little et al., 2003; Vitaro et al., 2002), reactive relational aggression was significantly associated with aspects of emotional and behavioral dysregulation such as impulsivity, hyperactivity, and susceptibility to angry emotionality. Also, reactive relational aggression was significantly more associated with emotional dysregulation than proactive relational aggression, providing evidence for divergence between the two subtypes. With regard to proactive aggression, proactive relational aggression was significantly associated with CU traits and low expectations for punishment. Further, proactive relational aggression was significantly more associated with CU traits and positive outcome expectations for aggression than reactive relational aggression, again showing the expected pattern of divergence between the subtypes. These results provide partial support for the hypothesis that reactive and proactive relational aggression show the same pattern of divergent correlations as reactive and proactive overt aggression.

The current study also sought to determine whether the reactive and proactive subtypes of relational aggression had unique predictive power or whether their associations with personality, emotional, behavioral, and social-cognitive deficits were solely due to their high correlation with overt aggression. Contrary to our predictions, reactive relational aggression did not predict unique variance in emotional, behavioral or cognitive dysfunction after the addition of reactive

overt aggression. These findings suggest that much of the association between relational aggression and these variables can be accounted for by shared variance between relational and overt aggression. This finding is somewhat inconsistent with past research reporting that relational aggression accounted for variance in social-psychological adjustment problems independently of overt aggression (e.g., Crick, 1996; Crick & Grotpeter, 1995; Prinstein et al., 2001). However, our lack of independent findings for relational aggression could be due to characteristics of our sample of detained adolescent girls that differentiate them from participants in past studies (i.e., normative samples of children and adolescents). That is, girls who show only relational aggression may be less likely to be found in detained samples than girls who show a combination of relational and overt aggression. More research is clearly needed on the predictive utility of relational aggression (independent of overt aggression) for problem behavior in adolescent girls, especially those involved in the juvenile justice system.

In contrast to our findings for reactive relational aggression, our predictions were partially supported for proactive relational aggression. That is, proactive relational aggression accounted for unique variance in CU traits independent of the variance accounted for by proactive overt aggression. These findings support the idea that relational aggression is an important correlate to serious antisocial and/or aggressive behavior in girls (Chamberlain & Moore, 2002; Moretti et al., 2001), and are especially noteworthy given that overt aggression was controlled for in the analyses. Taken together, the current findings support the contention that CU traits may be particularly important for explaining the development of aggressive and antisocial behavior in girls (see Frick et al., 2003; Marsee et al., in press; Silverthorn & Frick, 1999).

In contrast to CU traits, predicted independent associations for proactive relational aggression were not supported for positive outcome expectation and punishment expectation. These results are consistent with Crick and Werner (1998), who found that relationally aggressive girls did not expect positive outcomes for either relational or overt aggression. Crick and Werner hypothesized that this null finding may have been due to social desirability or the tendency for girls to underreport their use of relationally aggressive behavior (Crick & Grotpeter, 1995; Lagerspetz et al., 1988). More research is needed on the social-cognitive correlates of relational aggression in order to determine whether they are similar to the social-cognitive correlates of overt aggression.

The results of the present study also replicated past findings suggesting that reactive and proactive overt aggression may represent “distinct pathways for antisocial outcomes” (Poulin & Boivin, 2000b, p. 238) through their differential associations with social-psychological adjustment problems. Our results are consistent with past research (Day et al., 1992; Vitaro et al., 2002), showing that reactive overt aggression is uniquely associated with emotional dysregulation, behavioral dysregulation, and susceptibility to anger over and above the variance accounted for by proactive overt aggression. Further, we found that proactive overt aggression is uniquely associated with CU traits and low punishment expectations over and above reactive overt aggression, and that proactive overt aggression is significantly more associated with positive outcome expectation than reactive overt aggression. These results add important information to the literature on reactive and proactive aggression, in that they were obtained in a sample of detained adolescent girls, while most past research on these subtypes has been conducted with boys (see Frick & Marsee, in press for a review).

Unlike past researchers however, we did not find that reactive overt aggression accounted for unique variance in hostile attributional bias. This finding is somewhat surprising given the abundance of research suggesting that reactive aggression is often associated with the tendency to interpret ambiguous situations as intentionally hostile (Day et al., 1992; Dodge & Coie, 1987; Hubbard et al., 2001). However, these findings have largely been found in samples of boys, with results for girls being much less consistent. Some researchers have found that hostile attributional bias was less associated with conduct problems for girls than for boys (Frick et al., 2003) and others have found that girls did exhibit a hostile attributional bias, but that it was dependent on the type of provocation situation they were presented with (Crick et al., 2002). That is, overtly aggressive girls exhibited a hostile attributional bias for situations depicting overt provocation, and relationally aggressive girls exhibited the bias only for situations depicting relational provocation. Crick et al. also found that relational provocation situations were much more distressing for girls than for boys. These findings suggest that a possible reason for gender differences in hostile attributional bias across studies is that past studies (e.g., Frick et al., 2003) did not measure hostile attributional bias in response to relational provocation, which may be more applicable to girls. In the current study, however, hostile attributional bias for both relational and overt provocation was not associated with either reactive relational ($r = .05, p = ns$, for relational provocation and $r = .06, p = ns$, for overt provocation) or reactive overt aggression ($r = .17, p = ns$, for relational provocation and $r = .08, p = ns$, for overt provocation). These results and those from past studies clearly suggest the need for more research in this area in order to better understand potential gender differences in the association between hostile attributional biases and conduct problems.

Limitations

Results from the current study need to be interpreted in light of several limitations. First, the cross-sectional nature of the data makes it impossible to make any type of causal interpretations regarding the associations among aggression, delinquency, and social-psychological adjustment problems. For example, while it is certainly possible that expectations of positive outcomes for aggressive behavior may increase the likelihood that a child will act aggressively, it is also possible that a child who is aggressive and receives positive gains from this behavior could develop such positive expectancies over time.

Second, most of the variables measured in this study were assessed through self-report. While past research has shown that youth can be accurate reporters of their own behaviors, including delinquent and violent behaviors (e.g., Huizinga, 1991) and affective, interpersonal, and behavioral deficits such as those associated with psychopathy (e.g., Caputo et al., 1999; Silverthorn, Frick, & Reynolds, 2001), initial investigations of self-report of relational aggression have found mixed results (Björkqvist et al., 1992a; Lagerspetz et al., 1988; Pakaslahti & Keltikangas-Jarvinen, 2000). Further, the use of self-report measures may have artificially inflated associations among variables due to shared method variance. These issues were somewhat addressed through the use of an observational measure of relational aggression, which showed significant associations with delinquency and other variables of interest similar to those shown by self-reported relational aggression. However, distinctions between reactive and proactive relational aggression could not be made using this observational system.

An additional limitation to the current study was our small sample size, which may have affected the power to detect significant associations among variables. Further, this study was conducted solely with detained adolescent girls, and thus may not be generalizable to boys,

community youth, and/or youth in different age groups. Finally, although the ethnic breakdown of our sample was representative of detained girls in the state of Louisiana, it was primarily composed of African-American youth, which may affect the generalizability of the results to other ethnic groups.

Implications

Based on the results of this study and others (e.g., Chamberlain & Moore, 2002; Moretti et al., 2001), it is clear that the use of relational aggression by high-risk adolescent girls is associated with serious behavior problems such as physical aggression and violence, delinquency, and conduct problems. These findings suggest that, in addition to screening for overt and physical forms of aggression in detained adolescent girls, it may be useful to screen for relational and interpersonal types of aggression as well. One of the most novel and interesting findings in the current study is the finding that relational aggression predicted unique variance in callous and unemotional (CU) traits among detained girls. While many studies have examined associations between overt aggression and CU traits (see Frick & Marsee, in press, for a review), past studies of these traits among girls and women have typically failed to take into consideration gender differences in aggression. This lack of gender-specific research represents a serious limitation to the literature on girls' aggression, especially since the presence of CU traits in children has been shown to designate youth with more severe conduct problems (Christian et al., 1997). One recent exception to non-gender-related research was a study with a non-referred sample of children, which found that teacher-reported psychopathic traits were associated with relational aggression in girls but not boys (Marsee et al., in press).

Taken together, these findings highlight the importance of not only assessing relational aggression in girls, but also considering it a possible developmental correlate and/or precursor to

more severe and violent forms of aggression (also see Moretti & Odgers, 2002; Odgers & Moretti, 2002, for discussions). Further, these results address the call for treatment agents in juvenile justice to consider theoretical and developmental differences in youths' aggression in order to facilitate longer-lasting and more successful interventions for aggressive girls (Chamberlain & Moore, 2002). However, while research on treatment programs and interventions targeting overtly aggressive youth is abundant (see Frick, 2001), research on effective methods for reducing relational aggression is scarce. One interesting exception is a recent study by Van Schoiack-Edstrom, Frey, and Beland (2002) that tested the effectiveness of a school-based social-emotional learning program aimed at preventing aggression by fostering empathy and perspective-taking, problem solving, and anger management skills. One unique aspect of this intervention program (known as the Second Step program; Frey, Hirschstein, & Guzzo, 2000) is its conceptualization of aggression as both overt and relational. The program devotes a significant proportion of sessions to teaching youth about relational aggression as well as ways to reduce or inhibit relationally aggressive behavior. An important finding from this study was that, when tested at the end of the school year, youth who participated in the program were significantly less likely to endorse the use of relational aggression than were control youth who did not participate in the program. This study is one of the first to empirically test an intervention targeted at relationally aggressive behavior, and the findings are promising. This type of program has potential for use with girls in the juvenile justice system, as it can be implemented by teachers, psychologists, social workers, or other trained staff, and could easily be incorporated into daily classroom teachings and/or skills building groups.

Results from this study also suggest the need to consider both reactive and proactive subtypes of relational aggression, in that these subtypes show some divergent correlations with

important emotional, behavioral, personality, and social-cognitive variables. As suggested by researchers studying reactive and proactive overt aggression (e.g., Poulin & Boivin, 2000b), it is possible that reactive and proactive relational aggression represent distinct pathways to problem behavior, pathways which may require drastically different treatment approaches. This idea has several interesting implications for treatment planning for girls in juvenile justice. Not only does it bring girls' developmental issues to the forefront, as suggested by Chamberlain and Moore (2002), but it also provides a rich literature base from which to draw ideas for effective treatment planning. Research on reactively aggressive youth often points to emotion regulation or anger management training as an effective method for helping youth address and control aggressive responses when angry (see Larson & Lochman, 2003). In contrast, research on proactively aggressive youth suggests a different approach that focuses on empathy training and victim awareness, as well as training youth to reach their goals without the use of dominance or aggression (see Frick, 2001). Using this research base to inform treatment and intervention decisions with aggressive girls may result in more effective treatment outcomes.

Conclusions and Directions for Future Research

The results of this study provide evidence for the association between both self-reported and observed relational aggression and self-reported delinquency in a sample of detained adolescent girls. These results also expand on past research on aggressive subtypes by providing evidence for the validity of reactive and proactive subtypes of relational aggression. This study found evidence for divergence between reactive and proactive relational aggression on emotional dysregulation, CU traits, and positive outcome expectations for aggression. Future research should consider further validation of these subtypes by testing their associations with other substantiated correlates of reactive and proactive aggression, including history of abuse

(Strassberg et al., 1994), peer rejection (Poulin & Boivin, 1999; Schwartz et al., 1998), internalizing problems (Dodge et al., 1997; Vitaro et al., 1998; 2002), heart rate acceleration (Hubbard et al., 2002), and skin conductance (Hubbard et al., 2002). Further, due to the high correlation between relational and overt aggression (e.g., Crick, 1996; Marsee et al., in press) future investigations should test the independent associations of reactive and proactive relational aggression with important cognitive, emotional, behavioral, physiological, and social correlates to further determine the unique contribution of relational aggression to the prediction of these very important psychosocial variables.

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Appendix

Human Subjects Approval Form

University Committee for the Protection
of Human Subjects in Research
University of New Orleans

Form Number: 02SEP04
(please refer to this number in all future correspondence concerning this protocol)
Principal Investigator: Monica Marsee Title: Graduate Student
Faculty Supervisor: Paul Frick *(if PI is a student)*
Department: Psychology College: Science
Project Title: Exploring the Functional Subtypes of Relational and Overt Agression in
Date Reviewed: 09/15/2004

Dates of Proposed Project Period From 08/01/2004 to 05/01/2005
**approval is for one year from approval date only and may be renewed yearly.*

Note: Consent forms and related materials are to be kept by the PI for a period of three years following the completion of the study.

Approval Status	Date
<input checked="" type="checkbox"/> Full Committee Approval	9-23-04 <i>A</i>
<input type="checkbox"/> Expedited Approval	
<input type="checkbox"/> Continuation	
<input type="checkbox"/> Rejected	
<input type="checkbox"/> The protocol will be approved following receipt of satisfactory response(s) to the following question(s) within 15 days:	

Committee Signatures:

<u><i>Laura Scaramella</i></u>	Laura Scaramella, Ph.D. (Chair)
<u><i>Pamela Jenkins</i></u>	Pamela Jenkins, Ph.D.
<u><i>Anthony Kontos</i></u>	Anthony Kontos, Ph.D.
<u><i>Betty Lo</i></u>	Betty Lo, M.D.
<u><i>Richard B. Speaker</i></u>	Richard B. Speaker, Ph.D.
<u><i>Gary Talarchek</i></u>	Gary Talarchek, Ph.D.
<u><i>L. Allen Witt</i></u>	L. Allen Witt, Ph.D.
<input type="checkbox"/> <u><i>Kathleen Whalen</i></u>	Kathleen Whalen, LCSW

Vita

Monica A. Marsee was born in Monroe, Michigan in 1977 where she lived for three years before moving to Alabama with her family in 1980. Monica received her B.A. and graduated summa cum laude from the University of Alabama in 1999, and completed her M.S. at the University of New Orleans in 2003. She recently received a Dissertation Research Award from the American Psychological Association to help offset the costs of conducting her dissertation project. Monica received her Ph.D. in Applied Developmental Psychology in the summer of 2005. In the fall, she will begin a job as a tenure-track Assistant Professor at the University of Southern Mississippi in Long Beach, Mississippi. Monica plans to continue to conduct research on aggression among adolescent girls in both community and correctional settings. Her first goal as an Assistant Professor is to write a grant seeking funding to continue her research in both Mississippi and Louisiana.