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"You Meant To Do That:" Examining Reactive and Proactive Aggression and Their Relations to Social and Emotional Correlates

by

Stephanie Lee Bender

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Examining Committee

Dr. Veronica Smith, Educational Psychology

Dr. Christina Rinaldi, Educational Psychology

Dr. Lynn McQuarrie, Educational Psychology

Dr. Kimberly Schonert-Reichl, Educational and Counselling Psychology, and Special Education, University of British Columbia

Abstract

This study investigated the relations between teacher-rated reactive and proactive aggression and self-ratings of peer intimacy, peer group integration, inhibition of anger and coping with anger in children in grade 4 to grade 6 (n = 519). Grade and gender differences in the study variables were also examined. Although not significant, as predicted, there was a trend towards significance where proactive aggression increased by grade; however, contrary to predictions, the occurrence of reactive aggression did not decrease by grade. The two functions of aggression were strongly correlated with one another. Males were reported more aggressive than females and self-reported lower anger management and less peer group intimacy than females. Further, females who were rated as more reactively aggressive reported less peer group integration and peer intimacy. Males who were reported as reactively aggressive also reported less peer group integration. Reactive and proactive aggression in males was related to coping with anger.

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Table of Contents

List of Tables

Introduction

It has long been recognized that competent social and emotional functioning is important in childhood. Social and emotional competences are both signs of and explanations for adaptive functioning in childhood. Positive functioning in these areas has been found to be associated with academic success (Greenberg et al., 2003), positive peer relations (Eisenberg et al., 1993), and physical health (Salovey, Detweiler, Steward, & Rothman, 2000). On the other hand, children who possess deficits in social and emotional functioning appear to present more maladjustment. Socially and emotionally incompetent children suffer from more troubling peer relations, characterized by rejection and loneliness (Hubbard, 2001; Parkhurst & Asher, 1992), internalizing difficulties, like anxiety and depression (Olson & Rosenblum, 1998; Zeman, Shipman, & Suveg, 2002), and externalizing problems, like aggression (Campbell, 1994; Frey, Hirschstein, & Guzzo, 2000). Aggression refers to behaviour aimed at harming or injuring another person or persons (Parke & Slaby, 1983), and includes a number of behaviours such as hitting, pushing, kicking, spreading rumours, and excluding a peer (Coyne, Archer, & Eslea, 2006; Prinstein, Boergers, & Vernberg, 2001). Because aggression continues to be a prominent problem in children's homes, schools, and communities, it is important to further understand this troublesome behaviour.

Literature Review

Conceptualizing Aggression

Due to the complexity of aggression, there have been many conceptualizations of what aggressive behaviour entails. Hartup and deWit (1974) describe four conceptualizations that have been prominent in the research and theoretical literature.

First, the topographical approach to defining aggression focuses on the form of the act itself, or the directly observable features of aggressive behaviour, and although it has been helpful in defining aggression in lower-order species, it is less helpful with humans due to the heterogeneity in human aggressive behaviour (Hartup & de Wit, 1974). Next, approaches to understanding aggression focus on the antecedent conditions of aggressive behaviour, such as determining the intent of the behaviour. Dollard and colleagues (1939), for example, felt that intent to harm is an antecedent condition at the core of aggressive acts. This conceptualization is problematic since one's intention must be inferred because it cannot be directly observed. Also, this definition does not allow the outcome of the aggressive behaviour to be understood. As such, a third conceptualization of aggression includes the outcome of the aggressive act, such as injury of another individual (Parke & Slaby, 1983); however, this too has its pitfalls. This approach ignores the fact that the behaviour of others can cause injury in unintentional ways, and that obvious aggressive behaviours may not necessarily lead to injury (Dodge, Coie, & Lynam, 2006). Finally, 'mixed' definitions have been included in the conceptualization of aggression. For example, research has identified and studied various dimensions of aggressive behaviour, such as the functions of aggression, or the motives of the aggressor (Dodge & Coie, 1987; Little, Henrich, Jones, & Hawley, 2003; Poulin & Boivin, 1999; Poulin & Boivin, 2000). More specifically, a 'mixed' conceptualization can be seen when we distinguish between reactive and proactive aggression.

Functions of Aggression

Various terms have been used to identify the functions of aggression because there have been numerous attempts to classify types of aggression based on topographical

features of the behaviour itself (Dodge, 1991). For example, psychobiologists, such as Lorenz (1966), have made a distinction between affective aggression and instrumental aggression in animals, where affective aggression is characterized by "intensive patterned autonomic activation, "hot-blooded" anger or fear responses, frenzied, menacing attacks, defensive postures in response to threat, and a feeling of release, relief, and fatigue afterward," and instrumental aggression is characterized by "little autonomic activation or irritability, but is highly organized and "cold-blooded" and appetitive in function…The behaviour is patterned and directed toward the promise of a reward" (as cited in Dodge, 1991, p. 203).

When considering humans, Hartup (1974) identified two types of aggression in children based on the target of the act itself, where instrumental aggression "consists of grabbing, pushing, or shoving another in order to obtain an object, such as a toy," and hostile aggression is "person-directed, in that the goal is to hit, and hurt, another person" (as cited in Dodge, 1991, p. 204). Further, Hartup has explained that non-social object acquisition is the primary type of aggression shown in infancy and early childhood, but as children get older, their aggression tends to be more personally-directed as a part of interpersonal conflict (Dodge, 1991). For Dodge (1991), within the overt aggression category, distinctions can be made between behaviours that are angry and *reactive* and those that are non-angry and *proactive*. Although these labels have strong resemblance to hostile and instrumental aggression, they emphasize both the instigation to the behaviour and its incentives, and will be used in the present study.

Reactive aggression is defined as a hostile act displayed in response to a perceived threat or provocation (Dodge & Coie, 1987). An example of reactive

aggression is when a child pushes a peer after the peer bumped into him. *Proactive aggression*, on the other hand, is defined as a non-provoked act that occurs in anticipation of self-serving outcomes (Dodge & Coie, 1987). There is often an attempt to control a situation (i.e. through dominance, bullying or coercion) to reach a specific outcome. An example of proactive aggression is when a child threatens to use force to dominate another child. As noted by Dodge (1991), "all behaviours have aspects of reaction and proaction, in that one can make guesses regarding the precipitants as well as the functions of all behaviours" (p. 206). At the extremes, however, the distinctions between reactive and proactive aggression are based on topographical features, such as the presence or absence of anger, or the functional value. Overall then, reactive and proactive aggression, as functions of aggression fit within the fourth conceptualization of aggression as described by Hartup and deWit (1974), since, topographical features allow us to recognize reactive aggression as occurring in response to a threatening antecedent condition, whereas proactive aggression occurs based on the expected outcome of the response.

Theories of Reactive and Proactive Aggression

The constructs of reactive and proactive aggression were derived from distinct theoretical perspectives (Dodge, 1991). Theoretical explanations for reactive aggression were derived from the frustration-aggression model (Dollard, Doob, Miller, Mowrer, & Sears, 1939). The premise of this model is that when people become frustrated, they respond aggressively. The authors state that, "the occurrence of aggressive behavior always presupposes the existence of frustration, and contrariwise, that the existence of frustration always leads to some form of aggression" (Dollard et al., 1939, p. 1). They

argue that when people's goals are unexpectedly blocked, they will be more inclined to act in an aggressive way. The strength of the frustration-generated encouragement of aggression is directly related to the amount of satisfaction they had anticipated from the goal, and as a result of the goal-thwarting, had failed to obtain. According to this view then, aggression is an angry, defensive response to frustration.

Proactive aggression is regarded as a product of social learning (Bandura, 1973). Rather than placing an emphasis on drive factors, social learning theory proposed that external environmental cues were elicitors of aggressive behaviour (Bandura, 1973). More specifically, Bandura (1973) proposed that through environmental experiences, new behaviour is learned and maintained either directly or vicariously by reinforcement or punishment. For instance, aggressive behaviour may be acquired when an individual engages in a new behaviour, or views an influential role model perform a new behaviour that has a positive outcome. Similarly, these behaviours will be averted if they bring about a negative, punishing outcome. Thus, according to this view, aggression is driven by relatively positive outcome expectancies and self-efficacy for these behaviours, and is therefore controlled by external, positive reinforcement.

The frustration-aggression and social learning views on aggression suggest that different social-cognitive processes are responsible for aggressive behaviour (Crick & Dodge, 1994; Dodge & Coie, 1987). Social-cognitive theories assert that an aggressive response is not inevitable, but instead, an aggressive response is dependent on the way in which an individual perceives and interprets environmental events (Huesmann, 1994). More specifically, social information-processing theory offers a detailed model of how children process and interpret social cues and come to a decision that is more or less

competent (Crick & Dodge, 1994). It is assumed that children arrive at each social situation with past experiences and biologically determined abilities to perform that they draw upon during the situation. The child's response to the social situation is a function of sequential steps of processing that are hypothesized to occur relatively quickly and in parallel with a variety of feedback loops (see Figure 1). The steps include; (1) encoding relevant social cues; (2) representation and interpretation of the social cues; (3) clarification of goals; (4) response access or construction; (5) response decision; and (6) behavioural enactment. Skillful processing at each step is hypothesized to bring about competent behaviour, whereas deficits in each or any combination of the steps of processing result in more aggressive behaviour (Crick & Dodge, 1994).

For example, a child gets pushed by a peer while walking in the school hallway. The child must figure out what has happened (Step 1: attending and encoding) and why it has happened (Step 2: interpretation). Was it an accident or was it a purposeful act on the part of the peer? The child must then clarify their goals for this social situation (Step 3: clarification of goals). This may include wanting to remain friendly with the peer, or wanting to show the peer that he will not tolerate being pushed around. Next, the child generates and evaluates possible responses based on anticipation of outcomes, relations to goals, and self-efficacy for enacting the response (Step 4: response access or construction). He may want to get even by pushing the peer back, but decides against this response because he is a lot smaller and weaker than the peer, or he is afraid he will get in trouble by the teacher watching at the end of the hallway. Finally, the child chooses the most positively evaluated response (Step 5: response decision), and enacts the behaviour (Step 6: behavioural enactment). The social information-processing model has formed the

basis for a number of empirical studies of aggressive behavioural problems in children (e.g. Crick & Dodge, 1996; Dodge & Coie, 1987; Dodge, Lochman, Harnish, Bates, & Pettit, 1997; Schwartz et al., 1998).

Children who are reactively aggressive and those who are proactively aggressive have been shown to present distinct deficits in social information-processing, which relate specifically to their theoretical roots (Crick & Ladd, 1990; Crick & Dodge, 1996; Dodge & Coie, 1987; Dodge et al., 1997; Orobio de Castro, Merk, Koops, Veerman, & Bosch, 2005; Salmivalli, Ojanen, Haanpaa, & Peets, 2005; Schwartz et al., 1998; Smithmyer, Hubbard, & Simons, 2000). Reactively aggressive children show a deficient pattern of processing at Step 1 (attending and encoding) and Step 2 (interpretation) of the proposed model (Card & Little, 2007). These children tend to encode fewer, more hostile cues and attribute hostile biases to ambiguous provocation situations (Crick & Dodge, 1996; Dodge & Coie, 1987; Orobio de Castro et al., 2005; Schwartz et al., 1998). Specifically, hostile attributional bias, which is a term that was coined by Nasby, Hayden and dePaulo in 1979, has been found in a number of reactively aggressive children (Dodge & Coie, 1987). Interpretation that a peer has provoked the child with hostile intent prompts aggressive retaliation as a defensive reaction to a perceived threatening stimulus, which also appears to be in accordance with the frustration-aggression hypothesis (Dodge & Coie, 1987).

Dodge and Coie (1987) examined the interpretation mechanism of social information-processing in both rejected and non-rejected first and third grade males. The participants viewed hypothetical provocation stimuli on a television screen and then indicated their perception of the provocateur's intent, from a choice of hostile, benign or

accidental, prosocial or ambiguous. As hypothesized, the two reactive-aggressive groups (reactive only and combined reactive-proactive) made significantly more errors of presumed hostility than the proactive only and nonaggressive groups.

Further, the researchers hypothesized that inaccuracies and hostile biases in interpretation of peer intentions would be positively related to a high rate of overreactive aggression, which is characteristic of reactive aggression, but would not be related to a high rate of nonangry aggression, which is characteristic of proactive aggression (Dodge & Coie, 1987). In direct observations of children's playgroups, the number of errors of presumed hostility (processing at Step 2) was significantly positively correlated with the rate of overreactive aggression (processing at Step 6), but not with the rate of nonangry aggression, thus consistent with their hypothesis. This finding reveals that difficulty in early steps of processing, particularly at the interpretation step, has a negative effect on later steps, such as behavioural enactment.

Crick and Dodge (1996) also investigated social information-processing patterns in aggressive children. Their participants included both boys and girls who were in grade 3 to grade 6. In contrast to Dodge and Coie (1987), reactively aggressive children in grade 3 did not show more hostile attribution errors than proactively aggressive or nonaggressive children. Only in grade 5 and grade 6 did children who were reactively aggressive make more hostile attribution errors than children who were proactively aggressive, although this finding was not significant at the $p<.05$ level. Finally, because this study included females, in addition to males, the findings extend that of Dodge and Coie (1987) by showing that reactively aggressive females also exhibit hostile attributional biases.

Schwartz and colleagues (1998) extended the understanding of the social information-processing in aggressive youth by employing objective observation, rather than teacher ratings. Trained observers coded interactions of dyads of boys during free play. Proactive aggression in participants was coded when nonangry, goal-oriented behaviours were observed, such as when a boy teased, made fun of or physically abused his peer to reach an external goal. Reactive aggression was coded in participants when angry, aggressive behaviours were observed. This included observations such as when a boy responded to a peer with hostility and retaliatory behaviours. This research resulted in a consistent pattern of findings, where hostile attributional tendencies were marginally positively correlated ($r = .18$, $p<.075$) with reactive aggression, but not significantly correlated with proactive aggression ($r = -.12$, $p>.05$).

Recent research continues to show that reactive aggression is related to deficits in interpretation (Step 2) during social information-processing. Boys aged seven to 13 who had been referred for aggressive behaviour problems, as well as a comparison group, listened to vignettes concerning provocations by peers, then answered questions about social information-processing (Orobio de Castro et al., 2005). Results indicated that reactive aggression was uniquely associated with hostile intent attribution. Overall then, across general population samples and those that include specialized populations, findings are supportive of hostile attribution biases in reactively aggressive, but not proactively aggressive children, which suggest a processing deficit at the second step of social information-processing.

Proactively aggressive children, on the other hand, show a deficient pattern of processing at Step 4 (response access or construction) and Step 5 (response decision) of

the social information-processing model (Card & Little, 2007). These children demonstrate a processing pattern of anticipating favourable outcomes for aggressing (Crick & Dodge, 1996; Dodge et al., 1997; Schwartz et al., 1998; Smithmyer et al., 2000), valuing the rewarding outcomes of aggression (Boldizar, Perry, & Perry, 1989), and present high self-efficacy for aggression (Perry, Perry, & Rasmussen, 1986; Dodge et al., 1997). The expectation and valuation of positive instrumental and interpersonal outcomes for aggressive behaviour is believed to be positively associated to the subsequent performance of that behaviour, which is consistent with the social learning theory (Dodge et al., 1997).

Early research examining the relation between social cognition and aggression suggested that aggressive and nonaggressive children differ based on outcome expectations for behaving aggressively (Perry et al., 1986). An outcome expectancy is defined as "the individual's estimate of the likelihood of an outcome occurring" (Boldizar et al., 1989, p. 571). Children in middle childhood who were rated by their peers as the most aggressive were compared to children who were rated as the least aggressive on a self-report measure of response-outcome expectancies. The measure had children imagine they were performing a behaviour toward a specified classmate and then indicate their level of confidence that a specific consequence would occur. Aggressive children were more confident that aggression would produce tangible rewards and would reduce aversive treatment by others. This finding is consistent with the hypothesis that aggressive children would view the consequences of aggression more positively than nonaggressive children. Results also indicated that aggressive children report that aggression makes them feel good (i.e. leads to positive self-evaluations). This finding

was shown to increase with age, as higher mean scores were found for aggressive children in grade 7 when compared to mean scores for aggressive children in grade 4.

More recently, research has examined the functions of aggression in terms of their outcome expectancies regarding aggression. A study with a sample consisting of incarcerated youth found that proactive aggression, and not reactive aggression, was associated with a tendency to expect positive consequences for aggressive behaviour, such as anticipating feeling good about the aggressive act and having other students' respect (Smithmyer et al., 2000). These findings extend to non-incarcerated youth as well, where proactively aggressive children, either rated by their teachers (Crick & Dodge, 1996; Dodge et al., 1997), or classified by trained observers (Schwartz et al., 1998), evaluated aggression and its consequences in relatively positive ways.

Research has also shown that aggressive children value the rewarding outcomes of aggression, which can be recognized at Steps 4 (response access or construction) and 5 (response decision) of the social information-processing model (Boldizar et al., 1989). Similar to research by Perry and colleagues (1986), children in middle childhood who were rated by their peers as the most aggressive and the least aggressive completed a self-report measure examining outcome values of aggression. An outcome values is "the degree to which an individual attaches importance to, or cares about, the outcome" (Boldizar et al., 1989, p. 571). To investigate this, the questionnaire required participants to indicate how much they would care if specific consequences were to result from acts of aggression by themselves toward peers. Findings revealed that aggressive children differed broadly in the values they assigned to the outcomes of aggression, where aggressive children placed more value on achieving control of the victim, and placed less

value on suffering by the victim, retaliation from the victim, peer rejection, and negative self-evaluation. Although this research examined generalized aggression and did not examine the specific functions of the aggressors, the results present evidence that aggressive children attach more importance to the rewarding outcomes of aggression.

In addition to investigating outcome expectancies of aggressive youth, Perry and colleagues (1986) were among the first to examine children's perceptions of their abilities to perform aggressive behaviours. Again, children who were rated by their peers as most aggressive or least aggressive completed a self-efficacy measure. Consistent with their hypothesis, aggressive children were more confident of their ability to aggress than were nonaggressive children. Both Crick & Dodge (1996) and Dodge and colleagues (1997) investigated self-efficacy for aggressing in the functions of aggression and found proactively aggressive youth displayed greater self-efficacy for aggression than children who were nonaggressive. Taken together, research examining social information-processing of reactive and proactive aggression shows distinct patterns in processing. Reactively aggressive children appear to attribute hostile intent to peer provocations, regardless of whether the act was intended to be hostile or not, whereas proactively aggressive children anticipate positive outcomes for aggression and value the outcomes, as well as perceive themselves to be self-efficacious in their aggression.

Correlates of the Functions

Although reactive and proactive aggression are theorized to occur for different reasons and show distinct patterns of social information-processing, most studies to date have found a strong correlation between the two (e.g. Crick & Dodge, 1996; Orobio de Castro et al., 2005; Poulin & Boivin, 2000; Schwartz et al., 1998). This is a common

finding regardless of the type of measure (e.g. self-report, parent report, teacher report, observation) utilized to assess aggression, and it indicates that there is a high overlap between the two functions (Card & Little, 2006). This may suggest that individuals who are rating the behaviours have a difficult time dissociating reactive and proactive aggression, or it may also suggest that aggressive children tend to show some degree of both reactive and proactive aggression, which has been suggested by Dodge and Coie (1987). Nonetheless, none of the correlations that have been reported show a perfect relationship between reactive and proactive aggression, thus supporting their differentiation.

Studies conducting confirmatory factor analyses have added to the argument that reactive and proactive functions of aggressive are distinct, since a two-factor reactive-proactive model presents a better fit than a single-factor model (Poulin & Boivin, 2000; Raine et al., 2006). Poulin and Boivin (2000) examined the construct validity of reactive and proactive aggression as measured by Dodge and Coie's (1987) teacher-rating scale. In this study, the factor structure was examined by comparing the fit of both a single-factor model and a two-factor model. Results indicated that a two-factor model more adequately represented the data because the comparative fit index and the parsimony index of the two-factor model were higher than those for the single-factor model. Raine and colleagues (2006) found replicable evidence for a two-factor model for their *Reactive-Proactive Questionnaire* (RPQ), which is a self-report measure assessing reactive and proactive aggression in children and adolescents. Again, based on confirmatory factor analyses, they report that the two-factor model fit the data

significantly better than the one-factor model, thus suggesting that the two functions of aggressive behaviour have a distinct dimension.

In addition to confirmatory factor analyses providing support for the distinction between reactive and proactive aggression, research has shown that children's reactive aggression and proactive aggression are related to distinct etiological, behavioural, social, and emotional correlates.

Developmental Histories. In terms of the etiology of the functions of aggression, research has found that reactively aggressive children have histories of abuse and harsh discipline (Dodge et al., 1997), whereas proactively aggressive children have family histories of substance abuse and family violence (Connor, Steingard, Anderson, & Melloni, 2003; Connor, Steingard, Cunningham, Anderson, & Melloni, 2004). In a study investigating the prior developmental histories of children, it was found that those who were classified by their teachers as reactively aggressive, had experienced more physical abuse than those who were classified as proactively aggressive and nonaggressive (Dodge et al., 1997). Further, reactively aggressive children were also more likely to have experienced harsh discipline. Dodge and colleagues (1997) also examined the developmental histories of psychiatrically impaired, chronically assaultive youth and found that the reactively violent group and the proactively violent group, as classified based on official case files including parent, child, and criminal reports, both demonstrated negative early experiences. Although not statistically significant, the reactively violent children had more adverse family experiences (i.e. a substance abusing family member, interpersonal family violence, being raised by a single parent, unstable living conditions, and rejection by parents) than the proactively violent children, whereas

the proactively violent children were more likely to be the object of abuse and had exposure to aggressive role models.

Connor and colleagues extended this research by also examining psychiatrically referred youth (Connor et al., 2003; Connor et al., 2004). Results show that parental violence or arrest, as well as physical abuse by an adult perpetrator correlate with both reactive and proactive aggression. Thus, overall, findings suggest that the developmental histories of aggressive youth appear to depend on the experience of psychiatric difficulties. Reactive aggression, but not proactive aggression, in nonpsychiatrically impaired youth has been related to early experiences of physical abuse and harsh discipline. On the other hand, in psychiatric populations, both reactive and proactive aggression appear to be related to physical abuse and exposure to aggression, whereas reactive aggression only is related to adverse family experiences such as unstable living conditions. Nonetheless, examination of etiological factors presents a distinction between the two functions of aggression.

*Behavioural Correlate*s. Research has also examined a variety of behavioural correlates of reactive and proactive aggression. First, it has been recognized that there is an overlap between reactive aggression and core features of Attention-Deficit/Hyperactivity Disorder (ADHD), including attention problems, impulsivity, and hyperactivity (Connor et al., 2003; Dodge et al., 1997; McAuliffe, Hubbard, Rubin, Morrow, & Dearing, 2007; Vitaro, Brendgen, & Tremblay, 2002). Poor attentiveness and hyperactivity, as reported by parents when their child was six-years-old, have been found to be antecedent characteristics of children presenting reactive aggression in middle childhood (Vitaro et al., 2002). Teacher-rated impulsivity and hyperactivity have been

also found to occur concurrently with reactive aggression in clinically referred children aged 5 to 18 (Connor et al., 2003). Further, Dodge and colleagues (1997) found that teacher-rated attention problems and impulsivity exist with reactive aggression in elementary-school aged children. Interestingly, the differences between reactively aggressive and proactively aggressive children, such as history of physical abuse and anticipated positive consequences for aggressing, remained even after statistically controlling for these ADHD symptoms (Dodge et al., 1997).

Contradictory findings also exist, however, where proactive aggression, but not reactive aggression, has been found to be associated with ADHD symptoms (Pulkkinen, 1996; Raine et al., 2006). More specifically, Raine and colleagues (2006) found that those rated by their parents and teachers as having hyperactivity, impulsivity, and attention problems at age 7 had significantly higher self-rated proactive aggression scores at age 16. Also, according to Pulkkinen (1996), proactive aggression in males was related to poor attentiveness at age 14. Finally, although the findings may not generalize to community samples of children, both subtypes of aggression in clinically referred youth have been shown to correlate with the diagnosis of ADHD (Connor et al., 2004; Dodge et al., 1997).

Along with associations with ADHD symptoms, Oppositional Defiance Disorder (ODD) symptoms (e.g. often loses temper, deliberately annoys others, actively refuses to comply with adults' requests or rules) and Conduct Disorder (CD) symptoms (e.g. deliberately destroys others' property, often bullies, threatens or intimidates others, lies to obtain goods or favours) have also been investigated in terms of reactive and proactive aggression (Connor et al., 2004; Pulkkinen, 1996; Vitaro, Gendreau, Tremblay, &

Oligny, 1998). Based on peer nominations and teacher ratings, children aged 14 who were classified as proactively aggressive were prone to noncompliance, as well as conduct problems including truancy and incidents with the police (Pulkkinen, 1996). Complimentary findings are present in research by Vitaro and colleagues (1998), who found that proactive aggression at age 12 significantly predicted conduct disorder symptoms, and marginally predicted oppositional disorders in mid-adolescence (between ages 14 and 16). In order to make these findings more clinically relevant, logistic regressions were conducted, showing that being in the proactively aggressive group compared to the nonproactively aggressive group tripled the risk of having a disruptive diagnosis. Differential findings are shown when clinically referred children present with reactive and proactive aggression, where both subtypes of aggression correlate with ODD and CD (Connor et al., 2004). Like mentioned previously, these results may not generalize to community samples of children. Nonetheless, a variety of studies present evidence that the functions of aggression are related to symptoms of disruptive behavioural disorders, such as ADHD, ODD and CD.

Also in terms of behavioural correlates, research has examined the link between reactive and proactive aggression and participation in delinquent behaviours (Connor et al., 2003; Connor et al., 2004; Pulkkinen, 1996; Raine et al., 2006; Vitaro et al., 1998; Vitaro et al., 2002). Proactive aggression has consistently been shown to relate to later delinquency. Proactive aggression in males and females at the age of 14 predicted more deviant behaviours in adulthood (Pulkkinen, 1996). At age 27, males who were formerly classified as proactive aggressive drank more alcohol and had more arrests, and former

proactively aggressive females also drank more alcohol and smoked more cigarettes than other women.

Research by Vitaro and colleagues (1998) supports Pulkkinen's (1996) research that proactively, but not reactively, aggressive male adolescents had later criminal behaviours. Boys who were rated by their teachers as proactively aggressive at the age of 12, self-reported more delinquency at the age of 15 than those who were rated reactively aggressive or nonaggressive. Vitaro and colleagues (2002) extended earlier work by including female and male participants and measures of covert and overt delinquency. Again, proactive aggression and proactive-reactive aggression, as rated by teachers at ages 10, 11 and 12 was related to self-reported delinquency at age 13. More specifically, children with high levels of proactive aggression reported more overt delinquency, which consisted of acts of physical violence, as well as covert delinquency, which included theft and vandalism. Finally, these findings extend to clinically referred children, where proactive aggression was related to self-reported delinquency in the form of drug use (Connor et al., 2003; Connor et al., 2004). Overall then, although both reactive and proactive aggression have been shown to relate to ADHD symptoms, proactive aggression is more often associated with disruptive disorder symptoms and later delinquent behaviours.

Social Correlates. According to research investigating social correlates of the functions of aggression, reactively aggressive children manifest more social problems than proactively aggressive children (Day, Bream, & Pal, 1992; Dodge et al., 1997; Poulin & Boivin, 1999; Poulin & Boivin, 2000; Raine et al., 2006; Roland & Idsøe, 2001; Salmivalli & Helteenvuori, 2007; Schwartz et al., 1998). Studies have consistently shown

that reactively aggressive children are less socially preferred than proactively aggressive children (Dodge et al., 1997; Poulin & Boivin, 2000; Raine et al., 2006). In a study by Poulin and Boivin (2000), social preference was negatively related to reactive aggression, and positively related to proactive aggression, suggesting that Caucasian boys' use of reactive aggressive behaviour is associated with a negative peer status, whereas the use of proactive aggression is associated with a positive peer status. In another study examining the functions of aggression in boys, it was also shown that those who were reactively aggressive were seen as the least popular among their peers (Day et al., 1992). More specifically, the popular score received by the reactive group bordered the clinical cutoff, demonstrating that these boys were rated as being less popular than 98% of children in a normative sample. Finally, in a community sample consisting of both boys and girls, those who were classified as reactively aggressive, as well as those who were classified as both reactively and proactively aggressive experienced lower social preference by peers than those who were proactively aggressive or nonaggressive (Dodge et al., 1997).

In addition to differences in social preference, experience of peer victimization occurs differently for reactively and proactively aggressive children (Poulin & Boivin, 2000; Salmivalli & Helteenvuori, 2007; Schwartz et al., 1998). Victimization in boys' play groups was significantly positively correlated with reactive aggression, whereas the correlation between victimization and proactive aggression was not significant (Schwartz et al., 1998). Poulin and Boivin (2000) provide consistent results using a peer measure of victimization with items such as "kids make fun of him" and "kids try to hurt his feelings." Findings showed that the use of reactive aggression in boys was associated with peer victimization, whereas the use of proactive aggression is associated with an

absence of peer victimization. Moreover, recent research with a sample of boys and girls, looked at peer-rated reactive and proactive aggression and victimization at three time points across one year (Salmivalli & Helteenvuori, 2007). Accordant with prior research, reactive aggression among boys was positively related to victimization at each time point. This longitudinal study also extended prior research by finding that boys' reactive aggression predicted higher future levels of victimization; in contrast, boys' proactive aggression predicted lower levels of future victimization. Among girls, however, both reactive and proactive aggression were positively related to victimization, but no predictive links were found between the variables.

Social skills in reactively and proactively aggressive children have been researched (Day et al., 1992; Poulin & Boivin, 1999; Poulin & Boivin, 2000; Raine et al., 2006; Roland & Idsøe, 2001). Day and colleagues (1992) had teachers rate their male students in terms of their aggressive behaviour, and also complete a measure concerning the students' various social skills, such as sharing with others. Results show that boys classified as both highly reactively and proactively aggressive, as well as those who were purely reactive, were rated as the poorest at responding to teasing, sharing with others, negotiating and compromising, sportsmanship, and handling failure when compared to those classified as low on both reactive and proactive aggression. In addition to reactively aggressive boys having poor social skills in these areas, Poulin and Boivin (2000) found that the more a boy exhibited reactive aggression, the less he was perceived by his peers as being a leader. On the other hand, the more a boy exhibited proactive aggression, the more he was perceived as having leadership abilities. Although these studies show that proactive aggression is associated with social adjustment, this subtype of aggression is

also related to social problems. For example, compared to children who are reactively aggressive and nonaggressive, children who are proactively aggressive are more likely to initiate fights (Raine et al., 2006) and have more difficulty keeping out of fights (Day et al., 1992). Also, proactive aggression, as well as reactive aggression, is related to bullying others and being bullied, sometimes referred to as bully-victim status (Roland & Idsøe, 2001; Salmivalli & Nieminen, 2002).

Finally, research has also looked more specifically at friendships of reactively and proactively aggressive children (Poulin & Boivin, 1999). Poulin and Boivin (1999) conducted a longitudinal study to examine the concurrent and predictive relationships between boys' reactive and proactive aggression and the quality of their friendships. Boys participated in 10-minute interviews, which questions were designed to have the child identify their very best friend, and determine the reciprocity of the relationship with their best friend. The boys also completed questionnaires measuring friendship quality, which was made up of a supportive dimension, a conflict dimension, and satisfaction. These two steps were conducted at the beginning of the school year, in November, and again at the end of the school year, in May. Teacher ratings of reactive and proactive aggression were collected only at the beginning of the year. At the beginning of the school year, reactive aggression was negatively associated with friendship quality, but this function of aggression predicted a decrease in conflict in the friendship over the school year. Conversely, proactive aggression was positively associated with friendship quality at the beginning of the school year, but predicted an increase in conflict in the friendship over the school year. Thus, although initially it appears that reactive aggression is related to poorer friendship quality and proactive is related to positive

friendship quality, over time, these relations change. Unlike most research, this study included boys' own perceptions of their peer relationships, however, the sample is limited to one gender.

Emotional Correlates. Most of the research concerning emotional functioning and aggression has centered on generalized aggression. Aggression in elementary school children has been found to relate to poor emotional competence, such as negative emotionality, poor emotional regulation, and high emotional intensity (Eisenberg et al., 1996), as well as deficits in emotional knowledge (Denham et al., 2002). Because children's emotional functioning is likely to differ as a function of emotion type (Zeman, Shipman, & Penza-Clyve, 2001), recent research has examined emotions individually. Anger and sadness have received particular attention in the literature also examining aggression in children. According to Zeman and colleagues (2001), important aspects of effective emotional functioning are the ability to manage and express negative emotional experiences in a constructive manner (i.e. coping, inhibition of expression and dysregulated expression). Based on these aspects, two versions of a brief self-report instrument, with one examining sadness (i.e. the *Children's Sadness Management Scale*), and one examining anger (i.e. the *Children's Anger Management Scale*) were developed to investigate how children manage these negative emotions. With this instrument, Zeman and colleagues (2001) found that peer ratings of aggression were negatively associated with coping constructively with the normative experience of sadness (e.g. ability to calm oneself when sad) as well as with dysregulated expression of sadness (e.g. whining, moping and crying when sad) in a sample of fourth and fifth grade children. In a separate publication, coping with anger was inversely related to aggressive behaviour,

and there was a trend for dysregulated expression of anger to predict aggressive behaviour (Zeman et al., 2002). As expected, results also showed that the inhibition of anger (e.g. not showing anger when mad) was not related to aggression since this externalizing difficulty is not characterized by an over-control of emotions (Zeman et al., 2002). Furthermore, Clay et al. (1996) found similar results in males aged seven to 17. Those who had higher levels of parent-rated aggression reported that they expressed more anger outwardly, rather than holding their anger in. Also, these boys self-reported lower ability to control their anger. Overall, research reveals that children who are aggressive have difficulty managing negative emotional experiences constructively.

This abovementioned research points to anger being a prominent emotion experienced by aggressive children. Given this finding, it is surprising that more studies examining the functions of aggression have not also investigated their relations to anger. Perhaps reactive and proactive aggression relate differently to the management of anger, particularly since reactive aggression is often characterized by anger and proactive aggression is not (Dodge & Coie, 1987; Schwartz et al., 1998). Preliminary evidence does support their differential associations with this negative emotion, yet contradictory findings exist. First, Orobio de Castro and colleagues (2005) had boys listen to vignettes concerning provocations by peers and then answer questions concerning their own and peer's emotions. Results showed that reactive, but not proactive, aggression was uniquely related to reporting feelings of own anger in provocation situations. Similarly, McAuliffe and colleagues (2007) found that reactive aggression related positively to anger expression in children in grade two. Contradictory findings are present in research by Arsenio, Gold and Adams (2004), however. When teacher ratings of reactive

aggression were controlled, greater proactive aggression was related to greater feelings of anger for events not theoretically linked with anger, as shown by their selection of which emotional outcome they reported after hearing a brief story. The paucity of research examining anger management in reactively and proactively aggressive children, and the contradictory findings that are present in the existing research reinforce the need for further research in this area.

The Present Study

The purpose of the present study was to investigate associations between the functions of aggression and social and emotional functioning. More specifically, the relations between reactive and proactive aggression and peer relations and anger management will be examined in children in grade 4, grade 5, and grade 6. Additionally, grade and gender differences will be examined for each variable. With the progression of cognitive abilities and an increased ability to set goals, aggression becomes more planned (Kempes, Matthys, de Vries, & van Engeland, 2005). Also, proactively aggressive children expect to feel good following aggressive acts, and these positive self-evaluations have been found to increase with age (Perry et al., 1986). As such, it is hypothesized that children in grade 6 will show less reactive aggression than children in grade 4, and that children in grade 6 will show more proactive aggression than children in grade 4. Additionally, examination of gender differences has been limited in past studies investigating proactive and reactive aggression. Many studies have had samples consisting of only males (e.g. Day et al., 1992; Dodge & Crick, 1990; Poulin & Boivin, 2000; Raine et al., 2006; Schwartz et al., 1998; Smithmyer et al., 2000; Vitaro et al., 1998). Those that have included both males and females (e.g. Connor et al., 2003;

Mayberry & Espelage, 2007; Salmivalli & Nieminen, 2002) have produced mixed findings. As such, no specific hypothesis is made regarding gender.

Prior findings suggest that reactive and proactive aggression in children differ in terms of their relations with various social factors, such as peer relations (e.g. Day et al., 1992; Dodge et al., 1997; Poulin & Boivin, 1999; Salmivalli & Helteenvuori, 2007; Schwartz et al., 1998). Self-perceptions of peer relations were investigated since the majority of the studies to date have utilized external (e.g. peer or teacher) ratings of social functioning. By only focusing on external sources of information, children's own perceptions of "how things are going for them socially" is missed (Crick & Ladd, 1993). Obtaining information from children's own assessments of their relations with peers may help distinguish those who are having social difficulties from those who are not. Finally, it is critical that peer relationships in middle childhood are examined given that children in this stage of development desire acceptance and belonging (Parker & Gottman, 1989).

Because reactively aggressive children, and not proactively aggressive children, are less socially preferred (Dodge et al., 1997; Poulin & Boivin, 2000) and have few friends (Raine et al., 2006), it was hypothesized that reactive aggression in all three grades would be related to lower perceptions of peer relations. Proactive aggression, on the other hand, has been associated with positive concurrent social functioning, such as positive peer status and leadership (Poulin & Boivin, 2000). Further, while children who are proactively aggressive feel more efficacious about performing physically and verbally aggressive behaviours (Perry et al., 1986), this self-efficacy likely transfers to peer situations, where aggressive children report relatively high efficacy for competent behaviours that involve walking up to a group of peers and directly asking them to play

(Crick & Dodge, 1989). As such, it was hypothesized that proactive aggression would be related to higher perceptions of peer relations.

Next, the literature provides preliminary evidence for the role that emotional functioning plays in aggressive behaviour, however, the majority of aggression research investigating emotions has included generalized aggression, rather than subtypes of aggression (e.g. Clay et al., 1996; Eisenberg et al., 1996; Zeman et al., 2002). Because Zeman, Shipman and Penza-Clyve (2001) stress the importance of children's self-report when assessing their emotional experiences and expression (due to research by Achenbach and colleagues (1987) indicating that reports about internal experiences are thought to be more accurate when provided by the child themselves), children will be reporting their own perceptions regarding their anger management. Because reactively aggressive children, and not proactively aggressive children, have been shown to demonstrate hostile biases in their attributions of others' intentions, and because these biases are known to lead to reactive anger (Crick & Dodge, 1996; Dodge & Coie, 1987), it was hypothesized that reactive aggression would be related to lower perceptions of anger management. Because mixed findings have been shown for proactively aggressive children, no specific hypothesis is provided for these children and their anger management.

Summary of Study Hypotheses

1. It is hypothesized that the occurrence of reactive aggression in grade 6 will be lower than the occurrence of reactive aggression in grade 4. It is also hypothesized the occurrence of proactive aggression in grade 6 will be higher than the occurrence of proactive aggression in grade 4.

2. It is hypothesized that reactive aggression will be negatively related to peer relations, whereas proactive aggression will be positively related to peer relations.
3. It is hypothesized that reactive aggression will be negatively related to anger management. No specific hypothesis is provided regarding proactive aggression and anger management.

Method

Participants

The participants of the current study come from a larger study designed to evaluate the effectiveness of a classroom-based social and emotional learning program. The recruited student sample included 597 children from 30 grade 4, 5, and 6 classrooms. Three classrooms (N=62) were removed because they were split grade classrooms. 16 children (2.7%) were lost because they did not have all necessary measures complete. The final sample was comprised of 519 children (27 classrooms). There were 249 (48.0%) female and 270 (52.0%) male students. There were 158 (30.4%) students in grade 4, 159 (30.6%) in grade 5, and 202 (38.9%) in grade 6. For a breakdown of the number of students by grade, gender and age, see Table 1.

Procedure

Active consent was required for participation in the study (see Appendix A for ethical considerations). Teachers were provided with a letter outlining the purpose of the research study, the study procedures, a promise to maintain confidentiality and anonymity, contact information, and a consent form (Appendix A1). Upon receiving consent from the teachers to participate, written parental/guardian information letters and consent forms were sent home with the students to request their participation (Appendix

A2). A letter of support from the school principal was also included with each information letter and consent form (Appendix A3). Only the children who received written parental permission were included in the study, which was 84% of the children in the consenting classrooms. Finally, student assent to participate was requested from each student prior to data collection. A 100% assent rate was achieved.

Data collection occurred in October 2006. Trained research assistants group administered the questionnaires to the participants in each classroom. Data collection sessions were approximately 30-45 minutes in length. One research assistant read all instructions and questions out loud to students to control for reading difficulties. A second research assistant was available to address any student questions, and to ensure that the students were able to keep up with the pace of the class. At this time, teachers were provided with a questionnaire package with instructions to return the package within one month.

Measures

Demographics. The children were asked to provide information about themselves including their gender, date of birth, and race/ethnicity.

Teacher rating of proactive and reactive aggression. The Child Social Behavior Scale (CSBS; NLSCY, 2002; Appendix C) was used to assess children's proactive and reactive aggression. The CSBS was developed from questionnaires used in studies examining proactive and reactive aggression (see Crick & Dodge, 1996; Dodge & Coie, 1987), and is used by teachers to rate individual children's social behaviour with peers at school. Teacher's responded to three items assessing reactive aggression (Dodge & Coie, 1987) and nine items assessing proactive aggression (Crick & Dodge, 1996) for each

participating child. Examples of items measuring proactive aggression include “threatens or bullies other children to get his/her own way,” “ plans aggressive acts,” and “has hurt others to win a game.” Examples of items measuring reactive aggression include “when teased or threatened, he/she gets angry easily and strikes back” and “claims that other children are to blame in a fight and feels like they started the trouble.” The CSBS uses a three-point Likert scale ranging from *often or very true* to *never or not true*. Scores for reactive aggression can range from 3 to 9 and scores for proactive aggression can range from 9 to 27. Higher scores indicate higher levels of aggression. Previous research has provided supportive evidence for the construct validity of the CSBS (see Ladd & Profilet, 1996; Schonert-Reichl, Smith, Zaidman-Zait, & Hertzman, 2002). Cronbach’s alpha for the items measuring proactive aggression was .89 and Cronbach’s alpha for reactive aggression was .88.

Peer Relations. The Relational Provisional Loneliness Questionnaire (RPLQ; Hayden-Thomson, 1989; Appendix D) was used to assess children’s level of social support and satisfaction in their relationships. The original measure was composed of two sets of parallel items assessing the child’s relationship with family and peers. Each consisted of two subscales examining group integration and intimacy. In this study, only the peer subscales examining peer group integration and peer intimacy were included. Items measuring peer intimacy include “There is someone my age I could go to if I were feeling sad,” “I have at least one really good friend I can talk to when something is bothering me,” and “There is a friend I feel close to.” For our sample, Cronbach’s alpha for items measuring intimacy was .85. Items measuring peer group integration include “I feel part of a group of friends that do things together,” “I feel other kids my age want to

be with me," and "When I am with other kids my age, I feel I belong." For our sample, Cronbach's alpha for items measuring group integration was .85. A five-point Likert scale, which ranges from *always true* to *not true at all*, is used to specify the degree to which the participants believe each statement reflects their relationships. Scores could range from 7 to 35 for both subscales, where higher scores indicate a higher degree of peer intimacy or peer group integration.

Anger Management. The Children's Anger Management Scale (CAMS; Zeman, Shipman, & Penza-Clyve, 2001; Appendix E) was used to assess children's behaviourally oriented management of anger. Three subscales examining inhibition of anger, coping with anger, and dysregulated expression of anger make up the CAMS. Examples of items measuring inhibition include "I hold my anger in" and "I get mad inside but I don't show it." For our sample, Cronbach's alpha for items measuring inhibition of anger was .68. Examples of items measuring coping include "When I am feeling mad, I control my angry feelings" and "I can stop myself from losing my temper." For our sample, Cronbach's alpha for items measuring coping with anger was .66. Items measuring dysregulated expression were reverse scored and include "I do things like slam doors when I am mad," "I attack whatever it is that makes me mad" and "I say mean things to others when I'm mad." For our sample, Cronbach's alpha for items measuring dysregulated expression of anger was .48. Due to its low reliability, this subscale was removed from further analyses. Two of the items were filler items (i.e., 10 and 11). A three-point Likert scale, which ranges from *often true* to *hardly ever true* is used to indicate the degree to which the participants believe the statements reflect their anger

management. Scores could range from 3 to 9 for both subscales, where higher scores indicate more inhibition of anger and more constructive coping with anger.

Results

Preliminary Analysis

Prior to analysis, reactive aggression, proactive aggression, peer intimacy, peer group integration, anger inhibition, coping with anger, age, grade, and gender were examined for accuracy of data entry and missing data. One item from the CSBS questionnaire (#26: "Careful to protect self when aggressive.") was removed as it was missing 9.5% of the time, which is greater than the 5% suggested by Tabachnick & Fidell (2007). Preliminary analyses were conducted to ensure no violation of the assumptions of normality, homogeneity of variance and independence.

Teacher Ratings. The distribution for reactive aggression was positively skewed (1.47) and leptokurtic (1.24) suggesting that the majority of teacher's rated their students as having no or low levels of reactive aggression. Similarly, the distribution for proactive aggression was positively skewed (2.74) and leptokurtic (8.7) indicating that the majority of teacher's rated their students as having no or low levels of proactive aggression.

Self-Report Ratings. The distribution for peer intimacy was negatively skewed (-.73) and platykurtic (-.15) suggesting that the majority of participants considered themselves to experience high peer intimacy. For peer-group integration, the distribution was also negatively skewed (-.46) and platykurtic (-.29) indicating that the majority of participants perceived themselves as being integrated within their peer group. The distribution for inhibition of anger was slightly positively skewed (.04) and platykurtic (-.39) suggesting that slightly more participants reported less inhibition of anger. For

coping with anger, the distribution was slightly negatively skewed (-.15) and platykurtic (-.47) indicating that the slightly more participants perceived themselves as coping constructively with anger.

Overall, the skewness and kurtosis statistics of the reactive aggression and proactive aggression distributions, and slightly less for the peer intimacy and peer group integration distributions suggest that the data violates the assumption of normality. Since the sample was comprised of community children, this was an expected pattern. Most children are assumed to be non-aggressive and be reasonably happy with their peer relations, therefore, the positive skewness of the reactive and proactive distributions, and the negative skewness of the peer intimacy and peer group integration distributions does not indicate a problem with the scales, but instead, reflects the underlying nature of the measured constructs (Pallant, 2005). As such, transformations were not performed on the data. The violation of the normality assumption is of little concern, however, since non-normality has little effect on analyses, such as F-tests (Glass, Peckham, & Sanders, 1972) and Pearson r (Havlicek & Peterson, 1979), which were conducted following the preliminary analyses.

Group Differences

To assess group differences in children's social and emotional functioning, six analyses of variance were conducted in which gender (two levels: male and female) and grade (three levels: fourth, fifth, sixth) served as the independent variables and children's reactive aggression, proactive aggression, peer intimacy, peer group integration, inhibition of anger, and coping with anger served as the dependent variables. Due to unequal samples sizes and the lack of normality in the reactive aggression, proactive

aggression, peer intimacy, and peer-group integration distributions, Type III Sum of Squares was used. This model was used to test for group differences since it is invariant to cell frequencies (Field, 2005).

Reactive Aggression

See Table 2 for cell means and standard deviations of the reactive aggression scores x gender and grade. Levene's test of equality of error variances was significant ($p<.05$), suggesting that the variance of the dependent variable, reactive aggression, is not equal across the grade and gender. As such, a more stringent significance level ($p<.01$) was set for evaluating the results of the two-way between-groups analysis of variance, as suggested by Pallant (2005). The two-way between-groups ANOVA yielded a statistically significant main effect for gender [$F(1, 513) = 21.09$, $p<.01$]. Despite reaching statistical significance, the actual difference in means scores between groups was quite small (partial eta squared = .04). The overall mean score for males ($M = 4.38$, $SD = 1.81$) was significantly different from the overall mean score for females ($M = 3.72$, $SD = 1.30$). The main effect for grade [$F(2, 513) = 6.54$, $p>.01$] and the interaction effect [$F(2, 513) = .32$, $p>.01$] did not reach statistical significance.

Proactive Aggression

See Table 3 for cell means and standard deviations of the proactive aggression scores x gender and grade. Because Levene's test of equality of error variances was significant ($p<.05$) a significance level of $p<.01$ was set for evaluating the results of the two-way between-groups analysis of variance (Pallant, 2005). A two-way between-groups ANOVA yielded a statistically significant main effect for gender [$F(1, 513) = 8.41$, $p<.01$]; however, the effect size was small (partial eta squared = .02). The mean

score for males (M = 9.65, SD = 2.88) was significantly different from the mean score for females (M = 9.00, SD = 2.10). The main effect for grade [$F(2, 513) = 4.40$, $p>.01$] and the interaction effect [$F(2, 513) = .001$, $p>.01$] did not reach statistical significance.

Peer Intimacy

See Table 4 for cell means and standard deviations of the peer intimacy scores x gender and grade. Because Levene's test of equality of error variances was significant ($p<.05$) a significance level of $p<.01$ was set for evaluating the results of the two-way between-groups analysis of variance (Pallant, 2005). A two-way between-groups ANOVA yielded a statistically significant main effect for gender [$F(1, 513) = 33.84$, $p<.01$]. The actual difference in means scores between groups was moderate (partial eta squared = .06). The mean score for males (M = 24.49, SD = 7.04) was significantly different from the mean score for females (M = 27.98, SD = 6.05) indicating that females perceived themselves to have greater peer intimacy, on average. The main effect for grade [$F(2, 513) = .08$, $p>.01$] and the interaction effect [$F(2, 513) = 3.05$, $p>.01$] did not reach statistical significance.

Peer Group Integration

See Table 5 for cell means and standard deviations of the peer-group integration scores x gender and grade. Levene's test of equality of error variances was not significant ($p>.05$); therefore a significance level of $p<.05$ was retained for evaluating the results of the two-way between-groups analysis of variance (Pallant, 2005). The main effect for gender [$F(1, 513) = .24$, $p>.05$], the main effect for grade [$F(2, 513) = .08$, $p>.05$] and the interaction effect [$F(2, 513) = 3.05$, $p>.05$] did not reach statistical significance,

suggesting there were no significant differences in peer group integration for gender or grade.

Inhibition of Anger

See Table 6 for cell means and standard deviations of the inhibition of anger scores x gender and grade. Again, because Levene's test of equality of error variances was not significant ($p>.05$), a significance level of $p<.05$ was retained for evaluating the results of the two-way between-groups analysis of variance (Pallant, 2005). The two-way between-groups ANOVA yielded a statistically significant main effect for gender [$F(1, 513) = 7.56$, $p<.01$]; however, the effect size was small (partial eta squared = .02). The mean score for males ($M = 5.58$, $SD = 1.62$) was significantly different from the mean score for females ($M = 5.96$, $SD = 1.46$) indicating that females perceived themselves as inhibiting their anger more than males, on average. The main effect for grade [$F(2, 513) = 2.92$, $p>.01$] and the interaction effect [$F(2, 513) = .42$, $p>.01$] did not reach statistical significance.

Coping with Anger

See Table 7 for cell means and standard deviations of the coping with anger scores x gender and grade. Levene's test of equality of error variances was not significant ($p>.05$). As such, a significance level of $p<.05$ was retained for evaluating the results of the two-way between-groups analysis of variance (Pallant, 2005). The two-way between-groups ANOVA yielded a statistically significant main effect for gender [$F(1, 513) = 10.07$, $p<.05$]; however, the effect size was small (partial eta squared = .02). The mean score for males ($M = 6.09$, $SD = 1.65$) was significantly different from the mean score for females ($M = 6.53$, $SD = 1.46$) indicating that on average, females perceived themselves

as coping with anger better than males. The main effect for grade [$F(2, 513) = 1.31$, $p>.05$] and the interaction effect [$F(2, 513) = .14$, $p>.05$] did not reach statistical significance.

Relations Between the Functions of Aggression, Peer Relations and Anger Management

Correlations were computed between teacher-rated reactive aggression and proactive aggression on the one hand, and the social and emotional measures on the other hand. Because gender differences were found, the correlations were ran separately for males and females.

Males

Functions of aggression. Reactive and proactive aggression were significantly positively correlated ($r = .69$, $n = 270$, $p<.01$), which indicates that teacher-rated reactive aggression is associated with teacher-rated proactive aggression.

Reactive aggression. Reactive aggression was not significantly associated with peer intimacy. There was a negative trend toward significance for the relationship between reactive aggression and peer group integration ($r = -.12$, $n = 270$, $p<.05$), thus cautiously implying that teacher-rated reactive aggression is associated with lower self-perceptions of integration within the peer group. Further, coping with anger, but not inhibition of anger, was significantly correlated with reactive aggression. There was a small, negative correlation between the reactive aggression and coping with anger ($r = -.19$, $n = 270$, $p<.01$). Therefore, teacher-rated reactive aggression is associated with poorer self-reports of the ability to cope with anger constructively.

Proactive aggression. Proactive aggression was not significantly associated with peer intimacy or peer-group integration. Coping with anger, but not inhibition of anger,

was significantly associated with proactive aggression. There was a small, negative correlation between the two variables (r = -.16, n = 270, p<.01) indicating that teacher-rated proactive aggression is associated with self-reports of less anger inhibition. See Table 8 for males' correlations between reactive aggression, proactive aggression, peer intimacy, peer group integration, inhibition of anger, and coping with anger.

Females

Functions of aggression. Reactive and proactive aggression were significantly positively correlated (r = .76, n = 249, p<.01), which indicates that teacher-rated reactive aggression is associated with teacher-rated proactive aggression.

Reactive aggression. Peer-group integration was significantly associated with reactive aggression. There was a small, negative correlation between the two variables (r = -.17, n = 249, p<.01) indicating that teacher-rated reactive aggression is associated with poorer self-perceptions of integration within the peer group. There was also a negative trend toward significance for the relationship between reactive aggression and peer intimacy (r = -.14, n = 249, p<.05), thus cautiously implying that teacher-rated reactive aggression is associated with poorer self-perceptions of peer intimacy. Reactive aggression was not significantly associated with inhibition of anger or coping with anger.

Proactive aggression. In female participants, proactive aggression, as rated by teachers, was not significantly associated with self-reports of peer intimacy, peer group integration, inhibition of anger, or coping with anger. See Table 9 for females' correlations between reactive aggression, proactive aggression, peer intimacy, peer group integration, inhibition of anger, and coping with anger.

Discussion

The present study was designed to investigate social and emotional correlates of reactive and proactive aggression in a middle childhood sample. Hypotheses regarding the associations among peer intimacy, peer group integration, inhibition of anger, coping with anger, and the functions of aggression were partially supported, although significant limitations of the study prevent us from drawing firm conclusions regarding these hypotheses. These findings will be discussed, along with clinical implications and suggestions for future research.

Interpretation of Results

Grade Differences. Although no statistically significant findings were revealed concerning grade differences in reactive and proactive aggression, partial support for our first hypothesis was found. Contrary to our prediction, the occurrence of reactive aggression did not decrease by grade. Interestingly, teachers reported that participants in grade 4 and grade 6 were more reactively aggressive than participants in grade 5. On the other hand, as predicted, there was a non-significant trend, where the occurrence of proactive aggression, as reported by teachers, increased by grade. This function of aggression was lowest in grade 4 and highest in grade 6.

The finding regarding a trend towards an increase in proactive aggression is consistent with the progression of children's cognitive abilities suggested by Kempes and colleagues (2006). As children age, they acquire an increased ability to plan and set goals. As such, their use of proactive aggression is likely to increase since this function of aggressive behaviour involves goal-oriented behaviours (Dodge & Coie, 1987). In this sample, the teacher ratings of reactive aggression did not indicate that these behaviours

decreased significantly as children got older. Vitaro and colleagues (2002) found that reactive aggression was stable between ages 10, 11, and 12 using teacher-ratings. Further, McAuliffe and colleagues (2007) found that reactive and proactive aggression in second grade children were stable over one calendar year, even when accounting for the variance attributable to the other function of aggression at both time points. Overall, the results of the present study suggest that while there was a trend towards increases in proactive aggression at each grade in both male and female children in middle childhood, reactive aggression showed no discernable pattern. Findings from the present study's sample indicate that future research examining the specific patterns and stability of the functions of aggression should be conducted.

Gender Differences. The results of the study revealed statistically significant gender differences across all variables but peer group integration. Teachers rated male students as showing higher levels of both reactive and proactive aggression than female students. This is consistent with research by Mayberry and Espelage (2007) and Salmivalli and Nieman (2002) who found that males scored higher than females on proactive and reactive aggression scales. Interestingly, Mayberry and Espelage (2007) assessed the functions of aggression using self-reports, and Salmivalli and Nieman (2002) utilized teacher- and peer-reports. Thus, regardless of reporter, it appears that gender differences among these behaviours are consistent. These differences may be accounted for by the differential relationship values of males and females. Boys are more likely to focus on themes of instrumentality and physical dominance in their peer relationships (Block, 1983), which also happen to be characteristics of proactive aggression, and reactive and proactive aggression, respectively. Girls, however, are more likely to focus

on intimate, dyadic relationships with peers (Block, 1983). For this reason, they may be less likely to use aggression since this would disrupt the harmonious relationships that they value (Maccoby, 1990).

It is interesting to note that gender differences in reactive and proactive aggression in clinically referred youth differ. Connor and colleagues (2003) revealed high rates of aggression in both males and females, and suggest that gender differences in aggression may disappear when examining clinically ascertained samples. Overall, our results provide further support for the argument that males show more aggression than females, regardless of their motives for enacting this aggressive behaviour.

Gender differences were also found in the self-reports of peer relations. Female participants perceived themselves to experience greater peer intimacy than males. This is not surprising given the emerging importance of intimacy among friends during late middle childhood, particularly among females (Berndt, 1996). There is evidence suggesting that the relationship contexts of boys and girls are quite distinct during this time (Degirmencioglu, Urberg, Tolson, & Richard, 1998), where the genders differ in their experiences of peer intimacy (Parker & Asher, 1993). Girls tend to report high levels of intimacy within their friendships (Maccoby, 1990), whereas boys tend to participate in larger friendship groups (Degirmencioglu et al., 1998). Based on this previous research, one might assume that boys would report a stronger sense of peer group integration, however this was not the case across all grades. Only in grade 4 did males report greater peer group integration than females.

In addition to gender differences in peer intimacy, males and females differed significantly in terms of their perceptions of inhibition of anger and coping with anger.

Females perceived themselves as inhibiting their anger more often than males, as well as coping with anger more constructively (i.e. staying calm, keeping from losing one's temper). This is consistent with past research revealing that females express less negative emotion than males (Jacobs, Phelps, & Rohrs, 1989), since the inhibition of anger, as well as the constructive coping with anger, reduce anger expression. Perhaps this finding has to do with the finding that females anticipate a more negative reaction to the expression of a negative emotion, such as anger, than males (Underwood, 1997). Also, as suggested by Hubbard and colleagues (2001), who found that males express more facial, verbal, and nonverbal anger than girls, girls may be less likely to express negative emotion due to their socialization history, where girls are more concerned about maintaining harmony in their relationships than are boys. On the whole, our results revealed significant gender differences for both functions of aggression, as well as peer intimacy, inhibition of anger, and coping with anger.

Relations between reactive and proactive aggression. The correlations between reactive and proactive aggression for males and females were both substantial, indicating that there is a high overlap between the two functions of aggression. This finding is consistent with a number of studies examining reactive and proactive aggression. A meta-analysis by Card and Little (2006) found that across 36 studies (total N= 17, 360), the sample-size-weighted average correlation between reactive and proactive aggression was r= .68 (95% C.I. = .671, .687). Like our study, the majority of these studies relied on teacher-reports (72.2%) to assess the functions of aggression. Interestingly, when comparing teacher-, peer-, self-reports, and observations, there were significant differences in the correlations. The association was similar when assessed by teacher-,

peer-, or self-reports, however, those utilizing observations had substantially lower correlations between reactive and proactive aggression. This finding, and the fact that in the present study, the two functions were highly correlated regardless of gender, may suggest that the teachers were unable to distinguish reactive aggression and proactive aggression, and that trained observers may be better able to decipher differences in the functions of aggressive behaviour. If so, future research should utilize observational methods when possible.

Relations between the functions of aggression and peer relations. Partial support for our second hypothesis was found. For females, there was a trend towards peer intimacy being significantly related to reactive, but not proactive aggression. This negative association indicated that those females who were rated by their teachers as displaying higher reactive aggression, reported experiencing less intimacy in peer relations. Further, peer group integration was significantly negatively related to reactive, but not proactive aggression, for both females, and there was a trend toward significance for this association for males. This suggests that the more a child exhibits reactive aggression (as rated by their teacher), the poorer they perceive their integration within the peer group.

Most research to date has examined aggressive children's peer relationships using outside sources, most often peer-reports. Findings from these studies have found reactively aggressive children to be of low social preference (Dodge et al., 1997; Poulin & Boivin, 2000; Raine et al., 2006), victimized (Poulin & Boivin, 2000; Salmivalli & Helteenvuori, 2007; Schwartz et al., 1998), and have few friends (Raine et al., 2006), suggesting that children who are reactively aggressive experience social difficulties. The

present study is one of the few that has examined reactively and proactively aggressive children's own perceptions of their peer relationships, and thus, provides a new insight into these behaviours. Similar to previous findings that reactively aggressive children have been observed to exhibit poor social functioning, the reactively aggressive children also regard themselves as having less peer intimacy (females only) and poorer peer group integration.

Factors contributing to this self-assessment can only be speculated. Reactively aggressive children have been found to be less likely to have friends (Poulin & Boivin, 1999), and may have less opportunity to experience peer intimacy or peer group integration. Additionally, because children who are reactively aggressive tend to show symptoms of ADHD such as inattention, impulsivity and hyperactivity (Connor et al., 2003; Dodge et al., 1997; McAuliffe et al., 2007; Vitaro et al., 2002), these difficulties may have an impact on their ability to interact with peers in ways that bring about intimacy or a sense of integration within the peer group (e.g., listening well or avoiding interruption). Further, these symptoms may influence reactively aggressive children's social information-processing, particularly at the first two steps of processing, where they have been shown to have deficits (Crick & Dodge, 1996; Dodge & Coie, 1987; Orobio de Castro et al., 2005; Schwartz et al., 1998). Their tendency to encode fewer cues may show their impulsivity, and their failure to attend to relevant social cues may show their inattention, which are both more likely to bring about angry, retaliatory behaviour that can harm peer relations (Dodge et al., 1997). Finally, that boys' reactive aggression was not significantly related to peer intimacy is not surprising since, as mentioned previously,

boys are more likely to participate in larger friendship groups, where achieving intimacy may be more difficult than in relationships with a few close peers.

Relations between the functions of aggression and anger management. Support was found for our third hypothesis. As predicted, reactive aggression was inversely related to coping with anger, however this was significant only for males. No hypothesis was provided regarding proactive aggression, yet it was shown to be inversely related to coping with anger as well, and the association was significant for males. This association suggests that the more a child exhibits reactive and proactive aggression (as rated by teachers), the less likely they are to cope with their anger constructively. For example, the reactively or proactive aggressive child would be more likely to lose their temper. Neither function of aggression was significantly related to inhibition of anger.

Consistent with Zeman and colleagues (2002) who found generalized aggression to be negatively related to coping with anger, our results suggest that breaking down aggression into separate functions does not change this relationship, where both reactive and proactive aggression remain inversely related to coping with anger. Interestingly, this suggests that children who engage in proactive aggression, which is not characterized by anger, may have difficulties managing their experiences of anger, similar to children who aggress reactively. This is in accordance with past research that has revealed that proactively aggressive children expect to feel angry for events that are not linked with anger, such as those that emphasize sadness (Arsenio, Gold, & Adams, 2004). Our findings suggest that although both functions of aggression are related to an inability to cope well with anger, this anger may be presented in different ways. For example, reactively aggressive children may react angrily in response to provocation by a peer,

whereas proactively aggressive children may experience anger while attempting to acquire or maintain dominance over a peer.

Although this research did not specifically examine how coping with anger is experienced in situations involving aggression, it may have an impact on social information-processing. Because these children appear to have difficulty coping with their anger, this likely has an effect on what they attend to in social situations, and the meanings they attribute to the situations (Lemerise & Arsenio, 2000). For example, reactively aggressive children may interpret a peer's intent as hostile, which is consistent with prior research, and as a result, are unable to manage the anger that results from this interpretation, and react in a manner that is retialitory. Further, for children who are proactively aggressive, this inability to cope constructively with anger may have an impact on processing at later steps, such as when children access possible responses to the situation and evaluate these possibilities. Lemerise and Arsenio (2000) suggest that children who experience strong emotions, such as anger, may be too overwhelmed and self-focused to generate a variety of responses and evaluate them from all parties' perspectives. As such, the child is likely to engage in preemptive, or script-based processing, which does not follow rules of formal information analysis, and rather, is done "without thinking." The child is therefore likely to choose a response based on their predominant emotion, anger, and respond in a way that is unlikely to further social interaction, such as threatening or bullying a peer.

Taken together, this analysis failed to find differential relations of reactive and proactive aggression to peer relations and anger management. Reactive and proactive aggression were inversely related to peer group integration for both genders. Peer

intimacy was negatively related to reactive aggression for both genders and proactive aggression in females. Additionally, both functions of aggression were inversely related to coping with anger. Finally, for males, reactive and proactive aggression were negatively related to coping with anger. Few associations reached significance. Several reasons may explain why we did not detect differential relations, and why the magnitude of the relations were generally small.

First, reactive and proactive aggression may be so highly intercorrelated that there is little possibility of differential relations to adjustment. Our research, supplemented by Card and Little's (2006) meta-analysis, suggests that although the two types of aggression are not perfectly overlapping, they do co-occur at an extremely high level. Because they highly co-occur, there is therefore little possibility for one function of aggression to predict maladjustment in the absence of the other function. On the other hand, as suggested by Mayberry and Espelage (2007) who found the two functions of aggression to differ very little in relation to empathy, social competence and expectation for reward, other variables, yet to be explored, may better explain the underlying differences in these constructs.

Further yet, this high intercorrelation may be an artifact of our measurement approach. As explained by Little and colleagues (2003), traditional methods of assessing the functions of aggression have typically used items that include overlapping forms of aggression. Both the CSBS reactive and proactive items included in the present study often imply acts of overt aggression. For example, item # 8, which measures reactive aggression ("When teased or threatened, he/she gets angry easily and strikes back.") and item # 20, which measures proactive aggression ("Uses physical force, or threatens to use

force, to dominate other children.") both refer to the use of physical aggression. As a result, part of the overlap between our measures of reactive and proactive aggression is due to the variance shared in the form of aggression (Little et al., 2003). The relationships found between reactive and proactive aggression and peer relations and anger management raise uncertainty regarding the extent to which the associations reflect the function of aggression or the form of aggression that is inherent in the items used to measure the types of aggression (Card & Little, 2007).

Finally, our reactive and proactive aggression measure had a severely restricted range, where the majority of teachers rated their students as showing no or low rates of aggression, which likely decreased the strength of the correlations between the functions of aggression and the self-report measures (Gravetter & Wallnau, 2007).

Limitations of the Study

One must consider several limitations when interpreting the findings of the present study. First, the measures were collected from children within classrooms. As such, students in a particular classroom are more similar to each other than students randomly sampled from the national population of students, or from the school board (Osborne, 2000). The students in a particular classroom tend to come from a community that is more homogeneous in terms of morals, values, socio-economic status, family dynamics, educational preparation and other factors than the population as a whole. In addition, students in a particular classroom experience the same classroom environment, such as the same teacher and educational experiences, which may lead to increased homogeneity over time. Overall then, this nesting effect was not controlled for in our analyses, and may have influenced the results.

Second, as mentioned previously, there was a severe restriction of range for our teacher-rated proactive and reactive aggression. Whenever a correlation is computed from scores that do not represent the full range of possible values, one must be cautious about interpreting the correlation because the data will represent only a limited range of aggression scores. As such, the correlation within this restricted range could be different from the correlation that would be obtained from the full range of aggression scores (Gravetter & Wallnau, 2007). Caution must also be taken in making conclusions regarding direction of causation since the data are correlational in nature.

Further, extraneous variables that were not examined in this study may have contributed to the results. For example, no information was gathered regarding the participant's family dynamics, which has been shown to have an impact on children's social-emotional functioning (Evans & English, 2002). A final limitation concerns the fact that the aggression data was collected from a single source. Teachers rated their students on reactive and proactive aggression, and therefore, biases in our findings may have resulted from adventitious factors including reputation or intelligence (Day et al., 1992; Dodge & Coie, 1987). However, because children spend a large part of their day in school, teachers are an essential source of information on children's behaviour. Nonetheless, future research would benefit from collecting data from multiple informants, as well as in multiple environments, including friends, parents, and others from home environments. This would allow for a more rounded interpretation of children's reactive and proactive aggression.

Implications of the Study

Despite its limitations, the present study lends to prior research examining the functions of aggression and their associations with social and emotional functioning. The finding that reactive aggression *and* proactive aggression are related to low peer intimacy and peer group integration has important implications for intervention. Past research has often concluded, based on peer-reports, that proactively aggressive children fare better socially than reactively aggressive, however, our results reveal that from the aggressor's point of view, they are not faring as well as initially believed. Thus, if we treat them as if they are having no problems in their peer relations, we miss their troubled feelings, particularly concerning both gender's sense of poor integration within the peer group, and females' perception of a lack of intimacy with peers. As such, interventions targeting aggressive behaviour should also help these individuals focus on improving their peer relationships. This can be achieved by including nonaggressive students in intervention programs. This allows aggressive children opportunity to interact with their more positive peers. The aggressive children would benefit by observing, interacting with, and developing connections with positive peer models (Hudley, 2008). Along with being positive models, the nonaggressive children may also become allies in the peer world, beyond the intervention setting, thus improving the aggressive children's feeling of peer group integration.

The finding that both reactive aggression *and* proactive aggression are associated with maladaptive coping with anger has important implications for intervention as well. Although the experience of anger has been previously linked with reactive aggression (McAuliffe et al., 2007; Orobio de Castro et al., 2005) and interventions have thus

targeted anger in these children only (e.g. BrainPower Program; Hudley, 2008), our results suggest that proactively aggressive children should also be included in programs that include anger management strategies. Perhaps reactive and proactive children would still require distinct programs since their anger is likely to present itself differently, but our findings indicate that anger should not be dismissed as an emotion not experienced by proactively aggressive children.

Conclusion

Although not significant, as predicted, there was a trend towards significance where the occurrence of proactive aggression increased by grade; however, contrary to predictions, the occurrence of reactive aggression did not decrease by grade. Gender differences were found in all study variables but peer group integration. Further, for females, reactive aggression was significantly negatively related to peer-group integration, and there was a trend towards significance for the relation between reactive aggression and peer intimacy. For males, there was a trend towards significance for reactive aggression and peer group integration. Finally, reactive and proactive aggression were significantly inversely related to coping with anger for males.

In conclusion, the findings of the present study suggest a need for further investigations of reactive and proactive aggression since this study questions the distinctiveness of the separate functions. Also, this study demonstrates the value of studying aggressive children's own perceptions of their social and emotional experiences. Finally, the current findings provide information that can assist in the development, implementation, and evaluation of prevention and intervention programs targeting peer relations and anger management strategies in aggressive youth.

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Appendix A

Ethical Considerations

Free and informed consent. Free and informed consent was ensured in this study by providing prospective teachers with letters of information and consent forms. In addition, information letters and consent forms were sent home to the parents of the potential participants. The letters clearly stated that participation in this research is confidential, voluntary, and that participants are free to end participation in the research at any point without explanation or penalty. Further, parents and teachers were provided with the contact information for the principal investigator, a school district contact, and the Chair of the EE REB at the University of Alberta. In addition to obtaining parental consent, children were asked for their assent before participating.

Privacy, confidentiality, and anonymity. Privacy, confidentiality, and anonymity was ensured by not identifying children, teachers or school administrators by name or place of residence in any published or presented manner. Further, children's names were replaced by numerical codes, which were used to refer to all children and other participants in the computer database. All of the original data records were coded and maintained in a locked filing cabinet at the University of Alberta. Lastly, data that was coded on the computer hard drive was maintained on a password protected hard drive at the University of Alberta in a locked office space.

Appendix A1

Department of Educational Psychology
Faculty of Education

6-102 Education North www.uofaweb.ualberta.ca/edpsychology Tel: 780.492.5245
Edmonton, Alberta, Canada T6G 2G5 Fax: 780.492.1318

Dear Teacher:

You and your students have been selected to be participants in a research project that I am conducting at your school entitled **"Examining the Variability of Program Implementation of the 'Roots of Empathy.'"** This study is a partnership between several school districts/divisions in Alberta and myself (Dr. Veronica Smith at the University of Alberta). Listed below are several aspects of the project that will enhance your understanding of what your participation will involve, if you consent to participate.

Purpose: The purpose of the study is to examine the relation between intermediate grade children's social-emotional competence, their adjustment in school, and a program designed to enhance social and emotional understanding, the 'Roots of Empathy.' This study is the first of its kind in Alberta and will provide important information on the role of intervention programs in children's development. Ultimately, this understanding will better equip educators to improve education for all.

Study Procedures:

1. Student and Teacher Questionnaires: Students who participate in this study will be asked to fill out a survey in their classrooms that will be read aloud to them by myself and one of my Research Assistants. Completion of this survey will take approximately 30 minutes for two class periods, once at the beginning and once at the end of the school year. The first part of the survey asks about students' backgrounds, such as age, gender, family composition, and language spoken at home, and children are asked to report on how much they take the perspectives of others and about their friendships. The second questionnaire asks them to provide ratings of their own and their peers' positive and negative school behaviours and to provide information on their knowledge of babies and baby safety. In addition to obtaining information from children, classroom teachers will be asked to complete a brief checklist assessing various dimensions of your child's classroom behaviours. Information relating to school achievement will be collected from students' school records.

2. Classroom Observations: As part of this study we are interested in understanding how classroom social climate may influence child behaviours. We will observe and take video recordings of interactions in the classroom to better understand the social climate of each of the participating classrooms. We are seeking your support to allow observers to come into your class to record interactions while the learning opportunities are provided. The observers will be asked to record teacher and child and child-to-child interactions. The recordings will be coded at the University of Alberta. Essentially, we are interested in understanding if the classroom climates changes over the school year, with or without the 'Roots of Empathy' program, and if the classroom climate as a whole contributes to child social behaviours. These observations will occur approximately four times over the school year. We will observe only those students whose parents have given permission to participate.

3. Background and Teaching Experience: Participating teachers will be interviewed and asked to complete a brief questionnaire regarding their education and background. The interview and questionnaire will roughly take 10 minutes and will be completed twice during the school year.

Confidentiality: Results from the observations and questionnaires will be summarised by research assistants at the University of Alberta. All of the child and teacher responses to the questionnaires will be completely confidential and will not be available to other teachers, other parents, or other school personnel. **No specific teacher or child will be referred to by name or identified in any way in the report of the results. No child data will be available to anyone else without parent written consent**. Teachers may request the results of their individual classroom climate scores as they may find this information useful to guide their teaching practice**.** It is important that you understand that the observations that we are proposing are in no way an examination of teacher competence or expertise. We are only interested in determining the unique and individual social climate of each classroom and how this may or may not be influenced by implementation of the 'Roots of Empathy' program and contribute to child development.

Contacts: If you have any questions, please do not hesitate to call me at (780) 492-7425 (veronica.smith@ualberta.ca). The plan for this study has been reviewed for its adherence to ethical guidelines and approved by the Faculties of Education and Extension Research Ethics Board (EE REB) at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Chair of the EE REB (780-492-3751). [name of research officer in each school district], Assistant Superintendent with School District/Divison [# of district or division] has also reviewed this plan of study. If you have any questions or concerns about the study you can contact [him/her] locally at [phone number].

Teachers will be compensated for their time with a $75 honorarium if they choose to participate. Participation in this study is entirely voluntary and you may refuse to participate or withdraw from the study at any time, even after signing this consent form. Refusing to participate or withdrawal will not jeopardize your position in the school district in any way. Additionally, withdrawal from the study will not prohibit the payment of the honorarium if you originally chose to participate.

Thank you for considering participation in this aspect of the study and for completing the attached teacher consent form.
Sincerely,

Veronica Smith, Ph.D

TEACHER CONSENT FORM

Study Title: "Examining the Variability of Program Implementation of 'Roots of Empathy'"

Researchers: **Veronica Smith, Ph.D**.
Assistant Professor, Department of Educational Psychology, University of Alberta, 6-102 Education North, Edmonton, AB T6G 0A5
Phone: 780 492 –7325 veronica.smith@ualberta.ca

(KEEP THIS PORTION FOR YOUR RECORDS)

I have read and understand the attached letter regarding the study entitled "Examining the Variability of Program Implementation of 'Roots of Empathy.'" I have also kept copies of both the letter describing the study and this permission slip.

_____ Yes, I would like to participate in this study
_____ No, I do not wish to participate.

Signature_____

Name_____

Date_____

(DETACH HERE AND RETURN TO Dr. Veronica Smith)

I have read and understand the attached letter regarding the study entitled**:** "Examining the Variability of Program Implementation of 'Roots of Empathy.'" I have also kept copies of both the letter describing the study and this permission slip.
_____ Yes, I would like to participate in this study.
_____ No, I do not wish to participate

Signature_____

Name_____

Date_____

Appendix A2

Department of Educational Psychology
Faculty of Education

6-102 Education North www.uofaweb.ualberta.ca/edpsychology Tel: 780.492.5245
Edmonton, Alberta, Canada T6G 2G5 Fax: 780.492.1318

Dear Parent(s);

I am writing to request permission for your son/daughter to participate in an exciting research project that we are conducting at his/her school. The project is taking place in 3 regions in Alberta: Medicine Hat, Golden Hills, and Fort Saskatchewan. Listed below are several aspects of this project that you need to know.

Purpose: The purpose of this study is to examine the development of social and emotional behaviours in children and to understand the effectiveness of an educational intervention designed to promote social and emotional understanding and to reduce bullying in children. It is hoped that the results of this study will help educators better understand children's social development and the effectiveness of an educational intervention designed to promote social and emotional competence.

Study Procedures: Students who participate in this study will be asked to fill out a questionnaire at school, once at the beginning of the school year and again at the end the school year. The questionnaire will take approximately 30 minutes to complete. The questionnaire asks about students' background information, such as age, gender, and cultural background. Additionally, children are asked to report on how much they take the perspectives of others and about their friendships. The questionnaire also asks them to provide ratings of their own and their peers' positive and negative school behaviours and to provide information on their knowledge of babies and baby safety.

In our project, we are not, in any sense "testing" the children. There are no right or wrong answers – we simply want to know how children understand themselves and their emotions and how these understandings link to their school success. We have found that children genuinely enjoy the questionnaires, and are eager and happy to participate in helping us better understand the social-emotional development of Canadian children. Some of the children who participate in the study will receive a program in their classroom designed to promote empathy and other children in the study will not receive the program. In addition to obtaining information from children, classroom teachers are being asked to complete a brief checklist assessing various dimensions of your child's classroom behaviours. Information relating to school achievement will be collected from students' school records. Additionally, we will observe and take video recordings of interactions in the classroom to better understand the social climate of each of the participating classrooms.

Confidentiality: Results from the observations and questionnaires will be summarized by research assistants at the University of Alberta. All of the child and teacher responses to the questionnaires will be completely confidential and will not be available to other teachers, other parents, or other school personnel. **No specific teacher or child will be referred to by name or identified in any way in the report of the results. No child data will be available to anyone else without your written consent**. Teachers may request the results of their individual classroom climate scores as they may find this information useful to guide their teaching practice**.** It is important that you understand that the observations that we are proposing are in no way an examination of teacher competence or expertise. We are only interested in determining the unique and individual social climate of each classroom and how this may or may not contribute to child development.

Contacts: If you have any questions, please do not hesitate to call me at (780) 492-7425 (veronica.smith@ualberta.ca). The plan for this study has been reviewed for its adherence to ethical guidelines and approved by the Faculties of Education and Extension Research Ethics Board (EE REB) at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Chair of the EE REB (780-492-3751). Brian Cabrol Assistant Superintendent with the Elk Island School Division has also reviewed this plan of study. If you have any questions or concerns about the study you can contact him locally at 417-8227.

Thank you for considering your child's participation in the study and for completing the attached consent form.
Sincerely,

Veronica Smith, Ph.D

STUDENT CONSENT FORM

Study Title: "Examining the Variability of Program Implementation of 'Roots of Empathy'"

Researchers: **Veronica Smith, Ph.D**.
Assistant Professor, Department of Educational Psychology, University of Alberta, 6-102 Education North, Edmonton, AB T6G 0A5
Phone: 780 492 –7325 veronica.smith@ualberta.ca

(KEEP THIS PORTION FOR YOUR RECORDS)

I have read and understand the attached letter regarding the study entitled "Examining the Variability of Program Implementation of 'Roots of Empathy.'" I have also kept copies of both the letter describing the study and this permission slip.

_____ Yes, I would like my child to participate in this study
_____ No, I do not wish my child to participate.

Signature_____

Name_____

Date_____

(DETACH HERE AND RETURN TO classroom teacher)

I have read and understand the attached letter regarding the study entitled**:** "Examining the Variability of Program Implementation of 'Roots of Empathy.'" I have also kept copies of both the letter describing the study and this permission slip.
_____ Yes, I would like my child to participate in this study.
_____ No, I do not wish my child to participate

Your Child's Name: _____

Signature_____

Name_____

Date_____

Appendix A3

January 2007

Dear Parents/Guardians:

You will find attached a letter requesting permission for your son or daughter to take part in a very exciting research project at our school this year. This study will help us plan to meet the needs of all of our students.

We would like to get this project underway as quickly as possible so that we can use the information to plan programs in the near future. Please read the letter carefully as it explains the kinds of questions that will be asked and what will be done with the information. We would appreciate the return of the permission slip by tomorrow, if possible.

Thank you in advance for helping making our school an even better place to be for all of our students.

Yours Sincerely,

Principal

Appendix B

Student's Name or ID#: **Date:**

School: **Teacher:**

Child Social Behaviour Scale

Please consider the descriptions contained in each of the following items below and rate the extent to which each of these descriptions applies to **this child**, particularly in the context of his/her behaviour with peers. Using the answers "**never or not true**," "**sometimes or somewhat true"** and "**often or very true**," how often would you say that **this child . . .** (Mark the circle corresponding to your answer, mark only one response per item.)

	Never or Not true	**Sometimes or Somewhat true**	**Often or Very true**
Shows sympathy to someone who has made a mistake.	❍	❍	❍
Will try to help someone who has been hurt.	❍	❍	❍
Gets into many fights.	❍	❍	❍
Threatens or bullies other children to get his/her own way.	❍	❍	❍
Volunteers to help someone clear up a mess that someone else has made.	❍	❍	❍
When mad at someone, tries to get others to dislike that person.	❍	❍	❍
Destroys things belonging to his/her family, or other children.	❍	❍	❍
When teased or threatened, he/ she gets angry easily and strikes back.	❍	❍	❍
If there is a quarrel or a dispute, will try to stop it.	❍	❍	❍
When mad at someone, becomes friends with another as revenge.	❍	❍	❍
Offers to help other children (friend, brother or sister) who are having difficulty with a task.	❍	❍	❍
Claims that other children are to blame in fight and feels like they started the trouble.	❍	❍	❍
When another child accidentally hurts him/her (such as by bumping into him/her), assumes that the other child meant to do it, and reacts with anger and fighting	❍	❍	❍
When mad at someone, says bad things behind the other's back.	❍	❍	❍
Comforts a child (friend, brother or sister) who is crying or upset.	❍	❍	❍
Plays mean tricks.	❍	❍	❍
Threatens people.	❍	❍	❍
Spontaneously helps to pick up objects which another child has dropped (e.g., pencil, book).	❍	❍	❍
Is cruel, bullies, or is mean to others.	❍	❍	❍

Uses physical force, or threatens to use force, to dominate other children.	❍	❍	❍
When mad at someone, says to others, “Let’s not be with him/her.”	❍	❍	❍
Kicks, bites, hits other children.	❍	❍	❍
Plans aggressive acts.	❍	❍	❍
Helps other children (friend, brother or sister) who are feeling sick.	❍	❍	❍
Will invite bystanders to join in a game.	❍	❍	❍
Careful to protect self when aggressive.	❍	❍	❍
Gets other children to gang up on a peer that he/she does not like.	❍	❍	❍
When mad at someone, tells the other one’s secrets to a third person.	❍	❍	❍
Picks on smaller kids.	❍	❍	❍
Has hurt others to win a game.	❍	❍	❍
Hides aggressive acts.	❍	❍	❍
Takes the opportunity to praise the work of less able children.	❍	❍	❍
Can control own behaviour when aggressive.	❍	❍	❍

Appendix C

Friendship Questionnaire

For the following sayings, think about yourself and people your age when you answer. For each sentence, circle the number that describes HOW TRUE it is for you.

Read each sentence carefully. Answer honestly. Thank you.

	Not At All True	Hardly Ever True	Sometimes True	True Most of the Time	Always True
1. I feel part of a group of friends that do things together.	1	2	3	4	5
2. There is someone my age I can go to for support and advice.	1	2	3	4	5
3. I have a lot in common with other kids my age.	1	2	3	4	5
4. There is someone my age I could go to if I were feeling sad.	1	2	3	4	5
5. I feel in tune with other kids my age.	1	2	3	4	5
6. I have at least one really good friend I can talk to when something is bothering me.	1	2	3	4	5
7. I feel other kids my age want to be with me.	1	2	3	4	5
8. I have a friend who is really interested in hearing about my private thoughts and feelings.	1	2	3	4	5
9. I feel that I usually fit in with other kids around me.	1	2	3	4	5
10. I have a friend I can tell everything to.	1	2	3	4	5
11. When I want something to do for fun, I can usually find friends to join me.	1	2	3	4	5
12. There is somebody my age who really understands me.	1	2	3	4	5
13. When I am with other kids my age, I feel I belong.	1	2	3	4	5
14. There is a friend I feel close to.	1	2	3	4	5

Appendix D

Emotion Scale

The following sentences describe ways children might feel about their feelings. For each sentence, indicate how well it describes **you** by circling the number that describes HOW TRUE it is for you. Read each sentence carefully. Answer honestly. Thank you.

	Hardly Ever True	Sometimes True	Often True
1. When I am feeling mad, I control my angry feelings.	**1**	**2**	**3**
2. I hold my anger in.	**1**	**2**	**3**
3. I stay calm and keep my cool when I am feeling mad.	**1**	**2**	**3**
4. I do things like slam doors when I am mad.	**1**	**2**	**3**
5. I hide my anger.	**1**	**2**	**3**
6. I attack whatever it is that makes me mad.	**1**	**2**	**3**
7. I get mad inside but I don't show it.	**1**	**2**	**3**
8. I can stop myself from losing my temper.	**1**	**2**	**3**
9. I say mean things to others when I'm mad.	**1**	**2**	**3**
10. I try to calmly deal with what is making me feel mad.	**1**	**2**	**3**
11. I'm afraid to show my anger.	**1**	**2**	**3**

Table 1

Descriptive Statistics for Classrooms and Students

	Grade 4	Grade 5	Grade 6
Number of Classrooms	8	9	10
Girls	74	79	96
Boys	84	80	106
Mean Age (in years)	9.30	10.35	11.40
Total N	158	159	202

Table 2

Children's Reactive Aggression Scores by Gender and Grade

	Grade 4	Grade 5	Grade 6	Total
Males	4.47 (1.71)	4.06 (1.68)	4.56 (1.97)	4.38 (1.81)
Females	3.79 (1.25)	3.57 (1.14)	3.80 (1.46)	3.72 (1.30)

Note. Numbers in parentheses are standard deviations.

Table 3

Children's Proactive Aggression Scores by Gender and Grade

	Grade 4	Grade 5	Grade 6	Total
Males	9.26 (2.02)	9.53 (3.09)	10.03 (3.25)	9.65 (2.88)
Females	8.62 (1.28)	8.87 (1.64)	9.40 (2.79)	9.00 (2.10)

Note. Numbers in parentheses are standard deviations.

Table 4

Children's Peer Intimacy Scores by Gender and Grade

	Grade 4	Grade 5	Grade 6	Total
Males	25.68 (6.69)	24.08 (6.65)	24.49 (7.04)	24.49 (7.04)
Females	27.07 (6.47)	28.10 (5.21)	27.98 (6.05)	27.98 (6.05)

Note. Numbers in parentheses are standard deviations.

Table 5

Children's Peer Group Integration Scores by Gender and Grade

	Grade 4	Grade 5	Grade 6	Total
Males	26.25 (5.35)	25.52 (5.54)	24.89 (6.01)	25.50 (5.68)
Females	24.66 (6.26)	26.06 (5.73)	25.18 (5.91)	25.31 (5.97)

Note. Numbers in parentheses are standard deviations.

Table 6

Children's Inhibition of Anger Scores by Gender and Grade

	Grade 4	Grade 5	Grade 6	Total
Males	5.40 (1.60)	5.68 (1.64)	5.66 (1.62)	5.58 (1.62)
Females	5.68 (1.51)	6.23 (1.49)	5.96 (1.36)	5.96 (1.46)

Note. Numbers in parentheses are standard deviations.

Table 7

Children's Coping with Anger Scores by Gender and Grade

	Grade 4	Grade 5	Grade 6	Total
Males	5.98 (1.66)	6.14 (1.56)	6.15 (1.70)	6.09 (1.65)
Females	6.31 (1.55)	6.66 (1.40)	6.60 (1.44)	6.53 (1.46)

Note. Numbers in parentheses are standard deviations.

Table 8

Males' Correlations Between Reactive Aggression, Proactive Aggression, Peer Intimacy, Peer Group Integration, Inhibition of Anger, and Coping with Anger

	Reactive aggression	Proactive aggression
Peer Intimacy	-.01	.05
Peer Group Integration	-.12*	-.04
Inhibition of Anger	-.11	-.02
Coping with Anger	-.19**	-.16**

*p<.05 **p<.01

N= 270

Table 9

Females' Correlations Between Reactive Aggression, Proactive Aggression, Peer Intimacy, Peer Group Integration, Inhibition of Anger, and Coping with Anger

	Reactive aggression	Proactive aggression
Peer Intimacy	-.14*	-.05
Peer Group Integration	-.17**	-.05
Inhibition of Anger	.00	.03
Coping with Anger	-.11	-.11

*p<.05 **p<.01

N= 249