

EXAMINING RELATIONS AMONG ACCURACY OF SOCIAL SELF-
PERCEPTIONS, REACTIVE AND PROACTIVE AGGRESSION, PEER INTIMACY,
AND PEER GROUP INTEGRATION IN EARLY ADOLESCENCE

by

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Abstract

The purpose of the present study was to examine the relations among accuracy of social self-perceptions, reactive and proactive aggression, peer intimacy and peer group integration for boys and girls in early adolescence. Participants included 335 boys ($n = 175$) and girls ($n = 160$) in the fifth through seventh grades. Teachers rated students on reactive and proactive aggression. Self- and peer nominations on a range of social behaviours (prosocial and noncompliant) were collected. Participants provided self-ratings of their peer intimacy and peer group integration. Results revealed that girls had lower reactive aggression, greater peer intimacy, and more accurate social self-perceptions on both prosocial and noncompliant behaviours compared to boys. Findings additionally indicated that inaccurate self-perceptions of one's noncompliant behaviours were related to both reactive and proactive aggression for boys and girls. However, among boys only, more accurate self-perceptions of their prosocial behaviours was linked to problematic peer experiences involving higher proactive aggression and less peer intimacy.

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Introduction and Review of the Literature

Why is it that some children seem to be socially skilled in knowing what to do to have positive experiences with their peers? They engage in appropriate social behaviours, they are able to cultivate friendships, and they gain membership to a larger circle of peers. Does success in those areas have something to do with children's knowledge about their own social skills? To address these questions, the present study focuses on the relations of children's perceptions of their social behaviours and peer relationships to their aggressive behaviour.

Such questions are critical to address given that children's ability to establish successful relationships with their peers plays a fundamental role in their development (Landau & Milich, 1990; McDougall, Hymel, Vaillancourt, & Mercer, 2001; Parker & Asher, 1987). How children fare in terms of their social relationships with peers (e.g., friendships, peer group affiliations) and social behaviours (e.g., aggression) are regarded as indices of social functioning. Landau and Milich explain that difficulties in these areas of social relations interfere with the social development of children through a lack of reinforcement and modeling of positive interpersonal skills by the peer group. If children do not get along with their peers, the peer group will not be able to exert the necessary influences that contribute to the development of appropriate social skills.

As research indicates, the development of crucial emotional, social, and cognitive skills occurs in the context of peer relationships (Newcomb & Bagwell, 1996). According to Hartup (1999), an understanding of children's peer relationships involves examining their friendships as well as their experiences within the larger peer group. Difficulties in both these areas of peer relationships can have negative implications for children. For

instance, research suggests that aggressive children (Bagwell & Coie, 2004) as well as adolescents with behaviour problems (Schonert-Reichl, 1996) may have limited opportunities to engage in the positive social interactions awarded by high quality, close friendships and therefore, experience deficits in their social and emotional development. Others have demonstrated that maladaptive peer experiences in early childhood, including not being well liked by peers and being nominated as aggressive by peers, predict further social skills deficits (e.g., acting-out behaviour) during later childhood (Hymel, Rubin, Rowden, & LeMare, 1990).

Recent evidence suggests that chronic peer relationship adversity (e.g., peer rejection, friendlessness, victimization) puts aggressive children at risk for continued social problems (e.g., loneliness) later in childhood by exposing them to unfavourable relational processes and learning experiences that additionally shape the way they view themselves (Ladd & Troop-Gordon, 2003). As Salmivalli, Ojanen, Haanpaa, and Peets (2005) explain, observations and inferences that are made during children's social interactions with their peers tell children about their own as well as their peers' behaviour (see also Hymel, Bowker, & Woody, 1993). Consequently, researchers (e.g., Salmivalli & Isaacs, 2005; Salmivalli et al., 2005) are starting to take note that the two constructs of self-perceptions and perceptions of peers, both of which are relevant for children's social functioning, should not be studied in isolation from each other as they typically have in past studies.

Children's experiences with their peers are considered to be closely related to their sense of self (Landau & Milich, 1990). Some researchers propose that the way children view their social competence is based, in part, on the information they receive

about the self from their peers (Cillessen & Bellmore, 1999; Ladd & Troop-Gordon, 2003). According to Harter (1999a), symbolic interactionists, such as Charles Horton Cooley, have long believed that individuals' views of themselves are constructed around how they think generalized, significant others view them. It was originally proposed by Baldwin (as cited in Harter, 1999a) that views of the caregiver are incorporated into the sense of self first. From middle childhood onwards, as children expand their social spheres, appraisals from peers become an increasingly important source of influence for self-perceptions (i.e., how one describes oneself; Harter, 1999a, 1999b).

During middle childhood, children's self-perceptions become more congruent with evaluations from others (Harter, 1999b; Harter & Whitesell, 2003). However, even some groups of older children hold views of themselves that do not correspond to the way others see them. One such group is aggressive children (see Edens, Cavell, & Hughes, 1999; Hymel et al., 1993). Whereas peers perceive aggressive children differently compared to their nonaggressive counterparts (e.g., aggressive children are rated by peers as less cooperative), aggressive children's views of themselves do not appear to differ from the self-perceptions of nonaggressive children (Hymel et al., 1993; Rubin, Chen, & Hymel, 1993). Research examining aspects of the self in aggressive behaviour has lagged behind in adopting contemporary conceptualizations of aggression which distinguish between aggressive behaviours that emerge as a defensively angry retaliation to perceived threats (reactive aggression) and aggressive behaviours requiring no provocation, enacted for the purpose of obtaining desired social or material gains (proactive aggression) (Crick & Dodge, 1996; Little, Jones, Henrich, & Hawley, 2003).

A review of the literature indicates that more and more researchers (e.g., Boivin & Hymel, 1997; Burdett & Jensen, 1983; Cillessen & Bellmore, 1999; Hymel et al., 1990; Ladd & Troop-Gordon, 2003; Troop-Gordon & Ladd, 2005) are stressing the value of examining the relations between children's social perceptions and social experiences such as their aggressive behaviours. The present study examines how these variables are connected by exploring the relations among accuracy of social self-perceptions, reactive and proactive aggression, and perceptions of other social difficulties pertaining to early adolescents' intimacy with a particular peer as well as their integration with the larger peer group.

When discussing aspects of the self, it is important to clarify the terminology used in the literature and applied throughout this paper. First is "self-esteem," which refers to an individual's evaluation of his or her value or self-worth as a person (Harter, 1999b). Next is the term "self-concept," which Harter (1999b) defines as "evaluative judgements of attributes within discrete domains such as cognitive competence, social acceptance, physical appearance, and so forth" (p. 5). At a broader level are "self-perceptions" or how one describes oneself in terms of attributes or characteristics that are consciously acknowledged (Harter, 1999b). As Harter explains, self-perceptions can be used interchangeably with terms such as self-descriptions and self-representations. Accuracy of self-perceptions, as outlined by Hymel et al. (1993), refers to the discrepancy between an individual's perceptions of himself or herself and others' perceptions of that individual. The terms "self-other agreement," "accuracy proportion" (Cillessen & Bellmore, 1999), "perceptual bias" (David & Kistner, 2000), and "discrepant" versus "concordant" self-perceptions (Edens et al., 1999) have also been applied to denote

accuracy of self-perceptions. The present study focuses on the accuracy of self-perceptions in the social domain, which will be referred to as accuracy of social self-perceptions, because previous research has demonstrated that aggressive children distort their self-perceptions in this area (see Hoza, Pelham, Dobbs, Owens, & Pillow, 2002; Hughes, Cavell, & Grossman, 1997).

In the following sections, two theories on the relation between views of the self and aggressive behaviour are discussed: 1) the hypothesis that devalued views of the self cause aggression and 2) the hypothesis that favourable but fragile views of the self cause aggression. This is followed by a discussion of the most recent writings in which accuracy of self-perceptions is proposed to be associated with aggression.

The Hypothesis that Devalued Views of the Self Cause Aggression

Much of the research on the association between children's aggressive behaviours and their perceptions of themselves refers to the global self-esteem or general sense of self-worth of aggressive children. Within that area, the traditional belief is that aggressive children have low self-esteem. Even adult violent behaviours have traditionally been regarded as being caused by low self-esteem (Baumeister, Smart, & Boden, 1996). The reasoning is that factors that predict aggression are opposite to those that lead to healthy self-esteem development (Salmivalli, 2001). This low self-esteem theory of aggression has garnered some support in research. For instance, Lochman and Lampron (1986) found aggressive fourth and fifth grade boys (as rated by teachers and observers) to have poorer self-esteem compared to their nonaggressive classmates.

However, other studies have provided evidence which fails to support the notion that depreciated views of the self are related to aggression. Jacobs (1985) uncovered a

positive relationship between self-esteem and aggression among preschool boys. Kupersmidt and Patterson (1991) did not find an association between self-reports of general self-worth and aggressive behaviours two years later for their sample of second through fourth grade children. Self-reports of these participants also demonstrated that this lack of an association could be observed in their self-perceptions of social competence and subsequent delinquency. Indeed, a number of additional studies report no association between aggression and self-esteem (e.g., Hymel et al., 1993; Patterson, Kupersmidt, & Griesler, 1990; Rubin et al., 1993).

Equivocal findings across studies are not unique to research on aggression and self-esteem. Burdett and Jensen (1983) measured self-reports of aggression and self-concept among third through sixth grade students. They found that children scoring low on the Piers-Harris Children's Self-Concept Scale (Piers, 1969), relative to those with medium and high range scores, were the most aggressive. In contrast, Hughes et al. (1997) found higher self-concept scores on Harter's (Harter & Pike, 1984) physical competence subscale for aggressive compared to nonaggressive second and third grade children. Others have reported nonsignificant associations between self-concept and aggression. Total scores on the Piers-Harris Children's Self-Concept Scale (Piers & Harris, 1964) did not predict aggression among children in grades 2 through 5 (Schaughency, Frame, & Strauss, 1987). Conversely, for older children (grades 8 and 9) in Hong Kong, neither verbal nor physical aggression predicted perceived social competence (Chang et al., 2005). Hence, the amassed empirical evidence appears to render the hypothesis that devalued views of the self cause aggression questionable.

The Hypothesis that Favourable but Fragile Views of the Self Cause Aggression

As an alternative to the traditional belief that aggression is accounted for by low self-esteem, Baumeister et al. (1996) more recently posited that aggressive acts of violence among adults are instead associated with high self-esteem. Specifically, aggression is thought to arise when threatened egotism accompanies high self-esteem. Therefore, it is not an elevated self-esteem per se that leads to aggression. Rather, Baumeister et al. hypothesize that it may be a challenge to one's favourable self-appraisals that is associated with aggressive behaviour. The self-esteem of aggressive individuals is described as unstable or fragile in the sense that it is only upheld when negative aspects of the self are blocked out. In order to protect themselves from damaging information, these individuals may behave aggressively towards the source of the threat. It is only individuals with a positive but unstable or fragile view of themselves who Baumeister et al. propose to be aggressive.

Salmivalli (2001) has suggested incorporating assessments of "instability of self-esteem, narcissism, a grandiose or an overly positive self-view, or defensiveness in response to criticism" (p. 381) with traditional measures of self-esteem. When such an approach was taken, Bushman and Baumeister (1998) did not find a relationship between aggression (i.e., aggressive responding to negative feedback) and self-esteem among college students. Instead, narcissism (i.e., an excessive sense of self-importance) which was assessed using the Narcissistic Personality Inventory (Raskin & Terry, 1988) was associated with aggression especially when participants experienced an ego threat in the form of an insult. Participants were particularly aggressive towards the source of the insult rather than a third party who did not provide the negative evaluation.

Research on children and adolescents has generated comparable outcomes with many studies finding no association between aggression and traditional measures of self-esteem (e.g., Hymel et al., 1993; Patterson, Kupersmidt, & Griesler, 1990; Rubin et al., 1993). With alternative approaches, more recent research have been able to establish a connection between aggression and exaggerated but fragile views of the self. Washburn, McMahon, King, Reinecke, and Silver (2004) did not find the global self-esteem of fifth to eighth grade students to be correlated with any of their aggression measures including teacher, peer, and self-reports. In contrast, total scores on the Narcissistic Personality Inventory (Raskin & Hall, 1979) predicted self-reported aggression. When higher scores on the adaptive narcissism items (e.g., I want to amount to something in the eyes of the world) accompanied high self-esteem, teacher-reported aggression decreased. Therefore, among early adolescents, it is not simply the case that regarding oneself in a positive manner will be linked to aggression.

The fact that divergent results emerged with measures of aggression completed by different raters (self and teacher) in Washburn et al.'s (2004) study introduces a related point that the self-reports of aggressive behaviour can conflict with others' evaluations. Pakaslahti and Keltikangas-Jarvinen (2000) found that among 11- to 17- year-old students, self-reports of direct and indirect aggression diverged from teacher ratings and peer nominations which in contrast, corresponded with each other (see Hawley, 2003 for similar accounts). Moreover, it has been reported that the correspondence between others' perceptions of a child and the same child's perceptions of himself or herself (i.e., the accuracy of that child's self-perceptions) has connections to his or her aggressive

behaviour. In the next section, studies are presented in which the relations between accuracy of self-perceptions and aggression are examined.

Accuracy of Self-Perceptions and Aggression

In recent years, researchers (e.g., Salmivalli, 2001; Salmivalli et al., 2005) interested in the role that aspects of the self play in aggressive behaviour have recommended going beyond simply quantifying self-perception on a continuum from high to low and instead considering its appropriateness. For instance, researchers have reported inaccurate self-perceptions among aggressive children that do not correspond to ratings from others such as their teachers and/or peers (see David & Kistner, 2000; Hughes et al., 1997; Ledingham, Younger, Schwartzman, & Bergeron, 1982; Patterson et al., 1990; Xiao & Matsuda, 1998). Rather than recognizing their social ailments, these children do not see their maladjustment as perceived by others. This finding can be observed across diverse methodological approaches and samples.

In Ledingham et al.'s (1982) study, teacher, peer, and self-nominations of first, fourth, and seventh grade students were collected to assess aggression, withdrawal, and likeability. Peer ratings were used to identify subgroups of aggressive, withdrawn, aggressive-withdrawn, and control children. Nearly all nominations indicated that teacher-peer agreement was greater than the correspondence in either self-teacher or self-peer assessments. Both aggressive and aggressive-withdrawn children regarded themselves as less aggressive, less withdrawn, and more likeable than the other evaluators considered them to be. Additionally, Xiao and Matsuda (1998) successfully extended these findings to a sample of fourth and fifth grade children from China. Teacher, peer, and self-ratings on aggression and withdrawal were compared. Once

again, the agreement between peer and teacher ratings was greater than the self-other correspondence.

Aggressive children's views of their relationships with significant others, in addition to their self-perceptions, do not seem to be shared by significant others. Edens et al. (1999) found that second and third grade children with inaccurate perceptions of their social support relative to mothers', teachers', and peers' assessments of relationship quality engaged in higher rates of aggression compared to children with concordant self- and other evaluations. As well, mother and teacher reports of delinquent behaviours were higher for children with discrepant self- and other evaluations of social support. The importance of Edens et al.'s work is that they demonstrated that the accuracy of children's self-perceptions can be useful in differentiating actual aggressive behaviours.

It may be more critical, however, to examine the connection between aggression and accuracy of self-perceptions among older children given that it is considered normal for the self-perceptions of young children under the age of 8 to diverge from external sources of information about one's attributes (Harter, 1999b). Harter explains that the unrealistic or biased self-perceptions, referred to as "all-or-none thinking," of young children are not necessarily problematic. Instead, they reflect the cognitive limitations, such as the inability to comprehend the possession of opposing characteristics, that children that age display. To illustrate this point, Harter (1999b) gives an example of a young child who would typically describe himself or herself in only a very positive manner as in,

"I have a lot of friends, in my neighbourhood, at school, and at my church. I am good at schoolwork, I know my words, and letters, and my numbers. I can run

fast, and I can climb high ...I can do lots of stuff real good. Lots! If you are good at things you can't be bad at things" (p. 41).

As children get older, their self-perceptions (including social self-perceptions) become more realistic and congruent with evaluations from others (Ausubel, Schiff, & Gasser, 1952; Edens, 1999; Harter, 1999b; Harter & Whitesell, 2003). Self-perceptions significantly shift later in childhood as more complex social cognitive abilities (e.g., domain-specific evaluations) are developed that allow an integration of others' perspectives and an incorporation of positive and negative concepts of the self (Harter, 1999b). As illustrated by Harter (1999b), 11- and 12- year-olds describe themselves as being able to "understand some parts of science but not others" and to realize that they "could say something really smart in school but could be really dumb with your friends" (p. 50).

Research indicates that, relative to younger children, self-perceptions among early adolescents more accurately correspond with others' evaluations. Ausubel et al. (1952) studied the accuracy of children's self-perceptions of their peer acceptance. Children in grades 3, 5, 7, 11, and 12 were asked to rate how much they liked each of their classmates as well as how much they thought each classmate liked them. Results revealed that the correspondence between ratings children expected to receive from their peers and actual sociometric ratings was higher among older participants. That is, the correlations between self- and peer ratings increased with each successive grade level. The exception to the pattern of increasing social self-perception accuracy was observed in the levelling of scores between the fifth and seventh grade participants. There was a nonsignificant

difference in the magnitude of the correlation between the self- and peer ratings of students in early adolescence (i.e., from grade 5 to grade 7).

During the time period in early adolescence when increased accuracy of self-perceptions is observed in the social domain, the question still remains about the relation between views of the self and aggressive behaviour. Even when younger children were assessed in Edens et al.'s (1999) study, inaccurate self-perceptions of social support were not characteristic of all aggressive children. There were some clusters of aggressive children who appraised themselves in a manner consistent with evaluations completed by other raters. The fact that not all aggressive children display inaccurate self-perceptions led Edens et al. to suggest that future research should examine the different types of aggressive behaviours that children with varying accuracy of self-perceptions exhibit. In the present study, the relation between accuracy of social self-perceptions and different types of aggression in early adolescence is considered.²

Reactive and Proactive Aggression

Contemporary conceptualizations of aggression as a multidimensional construct have emphasized the distinction between reactive and proactive aggression (see Crick & Dodge, 1996; Little, Jones, et al., 2003). Reactive aggression can be defined as aggressive behaviours that are defensive and angry, emerging in retaliation to perceived threats. Proactive aggression, in contrast, requires no provocation and is instead enacted for the purpose of obtaining desired social or material gains.

The distinction between reactive and proactive aggression is related to the

² Early adolescence is from the ages of 10 to 14 (Arnett, 2004). Following Richard and Schneider (2005), fifth through seventh grade students comprised this age group in the present study.

motivational factors underlying the incidences of aggressive behaviours (Salmivalli, Kaukiainen, & Lagerspetz, 2000). One of the most prominent models of aggressive behaviour proposes that differences between proactive and reactive aggression can be explained according to discrepancies in the way social stimuli are processed (Crick & Dodge, 1994). In Crick and Dodge's social information-processing model, biased processing, characteristic of reactive aggressive children, occurs during the interpretation of social information when ambiguous social cues coming from others are more likely to be translated as containing hostile intent towards themselves. In contrast, children characterized as proactive aggressive demonstrate social information-processing biases during the formulation of a response decision wherein aggression is appraised as an effective tactic to achieve their goals. More recently, others have proposed that differences in the cognitive and affective dimensions of empathy may be what underlie the expression of reactive versus proactive aggression (Arsenio & Lemerise, 2001). As Eisenberg and Fabes (1992) explain, reactive aggressive children may be too consumed with their own emotions to accurately interpret others' emotional cues and be sympathetic whereas proactive aggressive children, whose emotional understanding remains unhampered, may not experience enough emotional arousal to react sympathetically towards their victims.

The utility of the reactive and proactive aggression distinction has recently been called into question by Bushman and Anderson (2001) who argue that not only can different motives lead to one form of aggression, the same motive can produce either reactive or proactive aggressive behaviour. Nevertheless, most researchers (e.g., Brendgen, Vitaro, Tremblay, & Lavoie, 2001; D. F. Connor, Steingard, Cunningham,

Anderson, & Melloni, 2004; Little, Brauner, Jones, Nock, & Hawley, 2003; Little, Jones, et al., 2003) continue to support the notion that classifying aggressive behaviours according to their reactive and proactive components will further our understanding of childhood and adolescent aggression. After reviewing animal, adult, and child literature on reactive and proactive aggression, Kempes, Matthys, de Vries, and van Engeland (2005) concluded that the reactive-proactive distinction is valid especially among children for a number of reasons. For instance, advances in measurement development (e.g., Little, Jones, et al., 2003) and statistical analysis (e.g., Poulin & Boivin, 2000a) have improved our ability to distinguish reactive from proactive aggression.

Numerous studies have also demonstrated reactive and proactive aggression to be associated with different sets of variables that reflect their theoretical distinctiveness. In addition to the divergent social information-processing styles that accompany reactive and proactive aggression (Crick & Dodge, 1996), differences have been found across subgroups of aggressive children with respect to their psychophysiology, developmental history, and social relationships. For instance, reactive aggression but not proactive aggression is related to physiological arousal measured by skin conductance reactivity (Hubbard et al., 2002) and prior physical abuse by an adult (Dodge, Lochman, Harnish, Bates, & Pettit, 1997). These findings are in line with the frustration-aggression model (Berkowitz, 1983) which reactive aggression stemmed from. According to Berkowitz, aggressive behaviours emerge from the perception of an environmental stimulus as aversive which precipitates negative emotional arousal leading to outbursts of angry aggression towards the perceived source of displeasure. In contrast, proactive aggression has its roots in Bandura's (1983) social learning theory which suggests that aggression is

a learned social behaviour reinforced by anticipated rewards for aggressive acts.

Accordingly, only proactive aggression is related to increased association with deviant peers for boys during early to mid-adolescence (Vitaro, Grendreau, Tremblay, & Olingy, 1998). As Poulin and Boivin (2000b) suggest, deviant peers may be more likely to endorse aggressive behaviour (see also Bagwell & Coie, 2004).

Accuracy of Self-Perceptions in Reactive and Proactive Aggression

Work in the area examining aspects of the self in aggression has been criticized for not adopting the distinction between reactive and proactive aggression that has been made in modern aggression research (Salmivalli, 2001). In particular, Edens and his colleagues (1999) recommended that researchers need to distinguish reactive from proactive aggression when investigating the degree to which self-perceptions converge with others' appraisals (see Edens, 1999 and Edens et al., 1999). They proposed that overly positive self-perceptions, in which reports of competencies are inaccurately inflated relative to others' ratings, would be characteristic of proactive aggression. By successfully preying on their victims, the self-esteem of the proactive aggressor supposedly increases. This form of aggression is thought to be enacted for the purpose of maintaining a grandiose sense of self. In contrast, reactive aggressive children were proposed to display negative self-perceptions that are accurate when compared with evaluations from other informants. This may be because aggressive children reporting decreased self-perceptions that correspond with others' evaluations may act out in a reactive manner to protect their devalued sense of self. From this perspective, it could be hypothesized that proactive aggression will be related to inaccurate self-perceptions whereas reactive aggression will be related to accurate self-perceptions.

A study by Washburn et al. (2004) on early adolescents in grades 5 through 8 provides some support for the argument that inflated views of the self are uniquely associated with proactive aggression. Specifically, Washburn et al. expected maladaptive narcissism to be positively related to proactive aggression but unrelated to reactive aggression. Indeed, higher scores on exploitative narcissism items (e.g., I can make anybody believe anything I want them to) of the Narcissistic Personality Inventory (Raskin & Hall, 1979) was significantly predictive of proactive aggression but not reactive aggression. The positive relationship between proactive aggression and maladaptive, exaggerated self-importance was observed over and above the variance accounted for by gender, exposure to violence, approval of aggression, and impulsivity (Washburn et al., 2004). What has yet to be examined is how accurately the self-perceptions of proactive aggressive children reflect others' appraisals.

Others have suggested that it may be reactive aggressive children who hold inaccurate views of themselves. For instance, although Salmivalli (2001) recognizes that narcissistic characteristics such as unrealistic self-grandiosity may accompany proactive aggression, she additionally proposes a connection between reactive aggression and distorted views of the self. Salmivalli explains that Baumeister et al.'s (1996) threatened egotism hypothesis, in which aggressive behaviour is thought of as a response to a threat to one's favourable yet uncorroborated self-perceptions, may be more applicable to reactive (rather than proactive) aggression. Salmivalli's reasoning is that reactive aggression has been tied to such phenomena as the experience of threat and feelings of fear and anger (e.g., Crick & Dodge, 1996; Price & Dodge, 1989) which are elements that also play a role in threatened egotism. As such, when situations are encountered that

appear to contest an individual's inflated but fragile self-perception, he or she may aggress in a reactive manner to uphold this inaccurate view of the self.

Results from Schippell, Vasey, Cravens-Brown, and Bretveld's (2003) study on 11- to 16- year-old participants demonstrated that only reactive aggression but not proactive aggression was related to suppressed attention to socially threatening cues (probe words) about rejection, ridicule, and failure. This relationship was found to be mediated by the interpretational bias that reactive aggressive children hold towards social threats. That is, the likelihood that an ambiguous social situation will be interpreted as threatening accounted for the relation between reactive aggression and attentional bias. In interpreting their findings, Schippell et al. suggest that the recognition of inappropriate behaviour and rejection among reactive aggressive children may be hindered by their suppressed attention toward information that may be discrepant from the manner by which they perceive themselves. From this perspective, which purports that reactive aggressive children display inattentiveness for social information that possibly counters their self-perceptions, it could be hypothesized that reactive aggression will be related to inaccurate self-perceptions.

To date, theoretical and empirical work have not come to a consensus regarding the relation of accuracy of self-perceptions to either reactive or proactive aggression. In fact, extant literature has tied both reactive and proactive aggression to inaccurate self-perceptions. Despite this lack of consensus, the discussion that has been initiated around the topic thus far is critical as it suggests that researchers are beginning to recognize the need to distinguish reactive from proactive aggression when examining how aggressive behaviour is related to views of the self. In order to expand on existing research, the

present study focuses attention on the connection of reactive and proactive aggression to discrepancies between children's self-perceptions and others' appraisals in the social domain (i.e., accuracy of social self-perceptions). Because there is currently not a universally adopted theoretical argument for whether reactive or proactive aggression is related to either overestimated or underestimated self-perceptions of one's social competencies relative to other's reports, the present study concentrates on the accuracy (rather than directionality) of children's social self-perceptions as it relates to their reactive and proactive aggressive behaviour.

Relations Among Accuracy of Self-Perceptions, Aggression, and Perceived Social Difficulties

More and more researchers are recognizing the importance of examining the relations between children's social perceptions and their social experiences (see Boivin & Hymel, 1997; Burdett & Jensen, 1983; Cillessen & Bellmore, 1999; Hymel et al., 1990; Ladd & Troop-Gordon, 2003; Troop-Gordon & Ladd, 2005). For instance, researchers have attempted to uncover possible connections of aggression to other social perceptions such as self-perceptions of social difficulties.

Loneliness is considered to be an aspect of children's perceptions of their social difficulties (Hymel & Franke, 1985). Previous efforts have not shown a direct association between aggressive behaviour and loneliness. In a study on third through fifth grade Canadian children, Boivin and Hymel (1997) found only a modest relation between aggression and peer-related loneliness. In fact, the effect of aggression on loneliness was accounted for by children's social status among their peers (i.e., whether or not they were actually liked by their classmates). Like Boivin and Hymel's study, a majority of the

studies examining childhood and adolescent loneliness have utilized unidimensional measures (e.g., Asher, Hymel, & Renshaw, 1984; Asher & Wheeler, 1985; Boivin, Hymel, & Bukowski, 1995; Parker & Seal, 1996; Parkhurst & Asher, 1992). However, within the loneliness literature perceptions of one's social circumstance have additionally been conceptualized as multidimensional whereby differences in individuals' social experiences are posited to impact their well-being in different ways.

According to Weiss (1973), two areas of interpersonal relationships that individuals can be discontented with are their social networks and intimate attachments. As neither of these two relational provisions can compensate for the other, Weiss believed that their accompanying affective states should be considered separately. Specifically, friendships and peer group affiliations are thought to promote feelings of intimacy and social integration, respectively. Conversely, the absence of close intimate relationships or friendships produces feelings of "the loneliness of emotional isolation" while the absence of desired social networks produces feelings of "the loneliness of social isolation." For Weiss, loneliness was defined as the absence of some relational provision and different forms of loneliness were believed to emerge as a function of inadequacies in one's social networks and/or intimate relationships.

In previous efforts examining childhood loneliness using unidimensional measures, aggression has not been linked to an overall sense of loneliness (e.g., Boivin & Hymel, 1997). However, when examining aggression as a multidimensional construct (i.e., reactive and proactive aggression), research suggests that it may be better to focus on the intimacy and social integration aspects of loneliness, as espoused by Weiss (1973), separately. This is because reactive and proactive aggression differ in their associations

with self-perceptions of social difficulties in the domains of intimate friendships and peer networks.

Differences in the relations of reactive and proactive aggression to children's perceptions of their friendships have been observed by Poulin and Boivin (1999). They reported that higher proactive aggression among boys in grades 4-6 was associated with self-reports of friendships as being less conflictual and more supportive and satisfying. The supportive aspect of these boys' friendships was comprised of measures of their intimacy as well as help and guidance, validation and caring, companionship and recreation, and conflict resolution. With respect to the conflictual aspect of friendships, boys' reactive aggression scores were positively associated with self-perceptions of their friendships as characterized by more conflict, betrayal, and competition. Reactive aggression among boys was also negatively related to friendship satisfaction.

However, the reactive aggressive boys in Poulin and Boivin's (1999) study were less likely to have friends to begin with. In fact, participants with significantly higher reactive aggression scores were never chosen by any of their peers as a best friend. Yet the absence of a reciprocated friendship was not related to how children perceived their friendships. What appeared to be associated with self-perceptions of friendship dimensions pertaining to conflict, support, and satisfaction were children's proactive and reactive aggression scores, with reactive aggressive boys reporting more problems in these areas. Because only boys were assessed in Poulin and Boivin's study, data on the relation of girls' perceptions of their friendships to their reactive and proactive aggression is lacking.

Recent evidence in which the distinction between reactive and proactive aggression is considered, suggests that differences additionally exist in the way these individuals perceive their social network. Salmivalli et al. (2005) queried children in the fifth and sixth grade about their perceptions of the peer group on dimensions of supportiveness, kindness, and trustworthiness. Peers, in turn, provided nominations for their classmates on reactive and proactive aggression. Results indicated that reactive aggression was associated with negative perceptions of the peer group. That is, perceptions of peers as increasingly unsupportive, hostile, and untrustworthy were associated with higher scores on reactive aggression. In contrast, no connection was observed between proactive aggression and perceptions of one's peer group.

When examining the correlates of friendships and social networks, early adolescence is a critical age to focus on given that experiences in both these areas of peer relationships gain importance. During early adolescence intimacy in friendships (e.g., sharing problems, talking about feelings) becomes increasingly salient (Berndt & Perry, 1990). For instance, Berndt, Hawkins, and Hoyle (1986) found that eighth graders report and value more intimacy in their friendships than participants in the fourth grade. While peer intimacy is gaining importance, early adolescents additionally begin to give more value to being a member of a popular peer group (Gavin & Furman, 1989). Therefore, when examining how reactive and proactive aggression are related to early adolescents' accuracy of self-perceptions and perceptions of their social difficulties, it is appropriate to adopt Weiss' (1973) multidimensional conceptualization of loneliness by assessing children's perceptions of their intimate friendships and integration with the peer group separately.

To summarize, past efforts have shown that aggression is linked to inaccurate self-perceptions that do not correspond to others' perceptions. However, the fact that some clusters of aggressive children appraise themselves in a manner consistent with evaluations made by others has led a group of researchers in the area of self-perception accuracy to recognize the need to adopt the distinction between reactive and proactive aggression that has been made in modern aggression research. Extant theoretical and empirical work has yet to reach a consensus regarding the relation of accuracy of self-perceptions to either reactive or proactive aggression, tying both types of aggression to inaccurate self-perceptions. Reactive and proactive aggression have also been connected to self-perceptions of one's social difficulties including perceptions of intimate friendships and peer networks. Whereas proactive aggression is associated with positive perceptions of one's intimate friendships, reactive aggressive children report increased problems with their intimate friendships and social networks. The assessment of both friendships and social networks is especially relevant in early adolescence when experiences in these areas of peer relationships are increasingly important.

Considering Gender

Salmivalli et al. (2005) found that when analyses were ran separately for each gender, both reactive and proactive aggression were negatively correlated with self-perceptions of the peer group only for girls. Specifically, a small but significant correlation between proactive aggression and negative views of one's peer group was uncovered among fifth and sixth grade girls. In addition, there was a significant moderate correlation between the girls' reactive aggression and negative self-perceptions of their peers. For boys, neither proactive nor reactive aggression was correlated with children's

perceptions of their peer group. Hence, differences between the sexes can be observed in the relation of reactive and proactive aggression to how children perceive their peers.

Gender differences have also been reported for children's perceptions of their friendships. For instance, J. Connor and Schonert-Reichl (2001) found greater perceived intimacy among the friendships of girls compared to boys for children in the sixth and seventh grade. As well, the greater intimacy in the friendships of girls has been observed to be accompanied by decreased aggression in comparison to boys. In a study by Lansford and Parker (1999), 56 triads of same-sex friends in the third through fifth grade were examined. Interviews and observations of these children indicated that the friendships of girls were characterized by less aggression and more intimacy relative to boys. Whereas girls were less verbally and physically aggressive and exchanged more personal information with one another, boys behaved more aggressively and had less intimate discussions with their friends. Cillessen and Bellmore (1999) additionally reported gender differences in the correspondence between self- and other ratings with less accuracy for boys compared to girls on self-perceptions of disruptive conduct and peer sociability. In light of the gender differences that have been uncovered in earlier research, the present study examined whether different relations between boys and girls social experiences and social perceptions can be observed.

The Present Study

The present study examines the relations of reactive and proactive aggression to accuracy of social self-perceptions, peer intimacy, and peer group integration for boys and girls. Gender differences are explored as they have been shown to exist for these variables. Prior to this study, the relations among these particular aggression and social

perception variables have not been analyzed by sex. Previous work in these areas suggests that among boys there is a connection between 1) proactive aggression and positive perceptions of one's intimate friendships, and 2) reactive aggression and negative perceptions of one's intimate friendships. Boys' and girls' negative perceptions of their peer group appear to be related to reactive aggression. For girls, there is an additional connection between negative perceptions of the peer group and proactive aggression. In the current investigation, associations similar to those uncovered in previous research were expected to arise and such associations were extended to examine whether they could be observed for both genders. Reactive and proactive aggression was additionally examined to determine whether they are both connected to inaccurate self-perceptions in the social domain. Finally, the contribution of accuracy of self-perceptions, peer intimacy, and peer group integration to reactive and proactive aggression was assessed.

To this author's knowledge, peer intimacy and peer group integration have not been examined together in a single study with regard to their relation to accuracy of self-perceptions, and reactive and proactive aggression. An appropriate means of assessing the two distinct concepts of friendship intimacy and social integration as theorized by Weiss (1973) would be to use a measure conceptually designed to tap both constructs. Following Weiss' multidimensional conceptualization of loneliness, Hayden (1989) developed the Relational Provision Loneliness Questionnaire (RPLQ), a scale to assess the degree to which children experience peer intimacy and peer group integration in their lives. Support has been garnered for the distinctiveness of the peer intimacy and peer group integration subscales as tapping two unique, albeit related, facets of relationship

satisfaction (Terrell-Deutsch, 1999). The approach taken in the present study was to use the RPLQ in examining the relations of peer intimacy, peer group integration, and accuracy of social self-perceptions to reactive and proactive aggression.

Method

Participants

All of the participants were part of a larger longitudinal study examining the effects of a school-based social-emotional competence promotion program (Schonert-Reichl, Smith, & Zaidman-Zait, 2004). Data were drawn from pre-test measures administered prior to the intervention. Participants were recruited from public elementary schools located in one urban school district in a large western Canadian city. Of those students who were recruited for participation, 87% had both parental consent and child assent to participate, resulting in a sample size of 335 fifth through seventh grade students. Participants ranged in age from 9.81 to 13.15 years with an overall mean age of 11.16 years ($SD = .89$). Means and standard deviations of participants' ages by gender and grade are presented in Table 1. According to teacher reports, diverse ethnic backgrounds were represented by the participants with 39.7% being Asian. The ethnic composition of the remaining participants was White (32.2%), Indo Canadian (9.6%), Bi-Racial (5.4%), First Nations/Aboriginal (3.3%), Latin (3%), Black (1.8%), and other (1.2%).

Table 1

Means and Standard Deviations of Participants' Ages by Gender and Grade

Grade	Gender		
	Boys	Girls	Total
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Grade 5	10.29 (.28) <i>n</i> = 74	10.37 (.35) <i>n</i> = 72	10.33 (.32) <i>n</i> = 146
Grade 6	11.30 (.35) <i>n</i> = 53	11.32 (.32) <i>n</i> = 49	11.31 (.34) <i>n</i> = 102
Grade 7	12.34 (.35) <i>n</i> = 48	12.39 (.38) <i>n</i> = 39	12.36 (.34) <i>n</i> = 87
Total	11.16 (.90) <i>n</i> = 175	11.15 (.88) <i>n</i> = 160	11.16 (.89) <i>n</i> = 335

Note. Values of means and standard deviations are in years.

Measure of Proactive and Reactive Aggression

Teachers rated each participating student on a measure of reactive and proactive aggression developed by Dodge and Coie (1987). This measure contains three reactive aggression items (e.g., strikes back when teased) and three proactive aggression items (e.g., uses physical force to dominate) (see Appendix I). Items were rated using a 3-point scale (*Never/Not True*, *Sometimes/Somewhat True*, *Often/Very True*) where larger values indicated higher levels of aggression. This measure has been widely utilized by researchers who have investigated reactive and proactive aggression among children and adolescents. Internal consistency and construct validity has been established for both the reactive and proactive aggression items (see Crick & Dodge, 1996; Day, Bream, & Pal, 1992; Phillips & Lochman, 2003; Poulin & Boivin, 2000a; Vitaro et al., 1998). Confirmatory factor analysis by Poulin and Boivin resulted in adequate fit for the two-factor model of proactive and reactive aggression ($\chi^2 = 5.57$, $df = 8$, $p = 0.70$, CFI = 0.99, PNFI = 0.49). Among fourth through sixth grade Canadian children, this two-factor model evinced better fit than a single-factor structure (Poulin & Boivin, 2000a). Similar to coefficients reported by others (e.g., Brendgen et al., 2001; Vitaro et al., 1998), the internal consistency for the reactive aggression items was satisfactory (coefficient alpha = .84) in this study. For the proactive aggression items, coefficient alpha was .77. Reactive aggression and proactive aggression composite scores were created by averaging ratings of each subscale's items together. The reactive and proactive aggression subscales were correlated at .56 ($p < .01$). A correlation of this magnitude is not unexpected given previous accounts of values ranging from .41 to .78 (p 's $< .01$) (see Day et al., 1992; Brendgen et al., 2001; Poulin & Boivin, 2000b; and Phillips & Lochman, 2003).

Measure of Self- and Peer Nominations

Accuracy of self-perceptions was calculated for social behaviours in the present study because previous research has demonstrated that aggressive children may be especially likely to distort their self-perceptions when the aspects in question tap their areas of impairment such as social performance (see Hoza et al., 2002; Hughes et al., 1997). In the social domain, peers appear to be a more influential predictor of children's self-perceived competencies than teachers (Cole, 1991). From around middle childhood, children assess themselves with respect to similar others and comparison-based self-perceptions of one's abilities are influenced primarily by peers (Suls & Sanders, 1982). As such, accuracy of social self-perceptions was computed for self- and peer nominations in the present study.

Social behaviours were assessed using self- and peer nominations (see Appendix II). Crick and Ladd (1989) found that when class participation rates drop to 70%, the accuracy of peer nominations decrease in terms of how correctly they capture children's actual social standing. Because participation rates for each class were all over 76%, using peer nominations to evaluate participant's social behaviours was a valid approach in this study. Unlimited same and cross-gender peer nominations were used to examine two dimensions of social behaviours that Wentzel (2003; see also Wentzel & Erdley, 1993) characterized as noncompliant (start fights, break the rules and do things they're not supposed to) and prosocial (share and cooperate, help other kids when they have a problem). For the prosocial behaviour items, "includes other kids in their group when they are playing" was added because research has shown that among third through sixth grade children group inclusion is the most frequently mentioned prosocial behaviour that

both boys and girls engage in (Greener & Crick, 1999). Scores on the prosocial behaviour items were significantly correlated (r 's = .71 to .79, p 's < .01), as were scores on the noncompliant behaviour items (r = .87, p < .01). The magnitude of these correlations made it appropriate to calculate composite scores (described below) for each dimension following Wentzel and Erdley.

For every behavioural description participants were provided with nomination rosters consisting of the first names and last initials of all the boys and girls in the class together (see Huesmann, Eron, Guerra, & Crawshaw, 1994 for similar peer nomination procedures). Students were instructed to circle as many or as few names as they wanted to indicate which of their classmates fit each of the behavioural descriptions. Peer assessments were derived by computing each participant's nomination (i.e., proportion) score for every behavioural description. This was accomplished by dividing the number of classmates circling a certain student's name by the total number of peers responding to an item.

The peer nomination rosters additionally included each participant's name for all prosocial and noncompliant behaviour items. Participants were informed that they could select their own name if they fit the behavioural descriptions. This enabled a comparison of self-perceptions with peer evaluations using identical items. A score of either 0 for the absence of a self-nomination or 1 for the presence of a self-nomination was assigned for each item.

An accuracy proportion score (for similar procedures see Cillessen & Bellmore, 1999) between self- and peer nominations was calculated as the proportion of peers who nominated a participant if a participant also nominated himself or herself. However, if a

participant did not nominate himself or herself for a particular item, then the accuracy proportion score was the proportion of peers who did not nominate the participant.

Accuracy proportion scores on the prosocial behaviour items were then averaged to form the composite score for accuracy of self-perceptions on prosocial behaviours. Similarly, accuracy proportion scores on the noncompliant behaviour items were averaged to form the composite score for accuracy of self-perceptions on noncompliant behaviours. Larger values represent greater accuracy of social self-perceptions. Smaller values represent less accurate social self-perceptions.

Measure of Peer Group Integration and Peer Intimacy

The Peer Group Integration and Peer Personal Intimacy subscales of Hayden's (1989) Relational Provision Loneliness Questionnaire (RPLQ) were administered to the participants. Each subscale contains seven items that participants respond to on a 5-point scale ranging from 1 (*not at all true*) to 5 (*always true*). A list of the seven Peer Group Integration items (e.g., I feel part of a group of friends that do things together) and the seven Peer Personal Intimacy items (e.g., I have at least one really good friend I can talk to when something is bothering me) appears in Appendix III. For all items on both subscales, higher values indicated greater feelings of intimacy with a peer or greater integration within the peer group. Similar to coefficients reported by McDougall and Hymel (1998), the internal consistency was high for the peer group integration items (coefficient alpha = .88) and for the peer intimacy items (coefficient alpha = .87). Peer group integration and peer intimacy composite scores were created by averaging ratings of each scale's items together. The peer group integration and peer intimacy subscales were correlated at .65 ($p < .01$).

Procedure

Upon securing written parental consent and child assent for participation, questionnaires were administered to students in their classrooms during regular school hours. Because data were gathered as part of a larger longitudinal study (Schonert-Reichl et al., 2004) to determine the effectiveness of a classroom program designed to foster socioemotional competence, the measures were included in the comprehensive battery of questionnaires employed in that study. Other scales not pertaining to the present investigation were administered during testing sessions. Demographic questions (e.g., grade, gender, birth date) were also included and appear in Appendix IV. A majority of the questions were read out loud to the students by a research assistant and answered synchronously. For the self- and peer nominations, students completed the measures at their own pace after instructions were provided to the class. In order to ensure that students were not influencing each other's responses, several procedures were put into place such as informing students that there would be no talking or sharing answers during the sessions. Research assistants monitored the students to ensure adherence to these procedures. Teachers then completed ratings for each participating student on proactive and reactive aggression along with other social behaviours. To minimize confounds related to program effects, only data gathered during the evaluation's pre-test collection phase in the Fall of the school year were used.

Results

Data Screening

Before beginning statistical treatment of the data, screening techniques outlined by Tabachnick and Fidell (2001) were conducted. Accuracy of the data was checked by

proofreading a random subsample ($n = 66$) of the original questionnaires against the computerized file. Out of range and missing values were inspected using the Frequencies function in SPSS. There were 8 boys and 14 girls who were missing one answer from either the reactive aggression, proactive aggression, peer intimacy, or peer group integration subscales. The total amount of missing data was 0.26%. Given this small number of missing values scattered throughout this large data set, the missing data does not pose a serious threat to the results (Tabachnick & Fidell, 2001). Tabachnick and Fidell explain that in large data sets, when a maximum of 5% of the data are missing in a random pattern, nearly all methods for dealing with missing values (e.g., deletion or estimation) provide similar results.

In the present study, missing values were imputed using expectation maximization (EM) method in LISREL/PRELIS. According to Hox (1999) and Tabachnick and Fidell (2001), the EM method is the easiest and most effective way to estimate missing data. The EM method operates under the assumption that data is missing at random (MAR) rather than missing completely at random (MCAR) and it uses all available data in its estimation. Missing data is replaced in the EM method by estimating their means and covariances (see Hox, 1999 and Tabachnick & Fidell, 2001). Means and covariances are then used to calculate a multiple regression equation with the specified variables for each participant. From these equations, the value of the missing data points can be predicted. Specifically, the expected values for the missing data are estimated using the available information. Missing data were then replaced with the estimations. By treating data as if missing values have been filled in, model parameters were predicted

via maximum likelihood procedures. The estimates for the missing values were saved in the data set after convergence was achieved and used in all analyses that follow.

Effects of Gender

Means and standard deviations for all variables were computed for boys and girls (see Table 2). Means and standard deviations by grade are displayed in Table 3.

To examine gender and grade differences, 2 (boys and girls) X 3 (grades 5, 6, and 7) ANOVA's were conducted for accuracy of self-perceptions on prosocial behaviours, accuracy of self-perceptions on noncompliant behaviours, reactive aggression, proactive aggression, peer intimacy, and peer group integration. For gender, the main effect was significant for accuracy of self-perceptions on prosocial behaviours, $F(1, 329) = 8.11, p < .01$, and accuracy of self-perceptions on noncompliant behaviours, $F(1, 329) = 38.94, p < .01$, with higher accuracy among girls compared to boys. Effect sizes were small for accuracy of self-perceptions on prosocial behaviours ($\eta^2_p = .02$) and medium-to-large for accuracy of self-perceptions on noncompliant behaviours ($\eta^2_p = .11$) according to values outlined by Stevens (1996) in which partial eta squared (η^2_p) of .01, .06, and .14 reflect small, medium, and large effect sizes, respectively. The gender main effect was also significant for reactive aggression, $F(1, 329) = 19.02, p < .01$, and peer intimacy, $F(1, 329) = 25.81, p < .01$, with medium effects sizes of $\eta^2_p = .06$ and $\eta^2_p = .07$, respectively. Teachers rated boys higher than girls on reactive aggression and greater intimacy with peers was reported by girls in comparison to boys. Differences between boys and girls were nonsignificant for proactive aggression, $F(1, 329) = 2.76, p > .05$, and peer group integration, $F(1, 329) = .60, p > .05$.

Participants did not display grade differences on any of the variables: reactive aggression, $F(2, 329) = .08, p > .05$; proactive aggression, $F(2, 329) = .16, p > .05$; peer group integration, $F(2, 329) = 1.17, p > .05$; peer intimacy, $F(2, 329) = .46, p > .05$; accuracy of self-perceptions on prosocial behaviours, $F(2, 329) = .93, p > .05$; accuracy of self-perceptions on noncompliant behaviours, $F(2, 329) = .32, p > .05$. Likewise, the grade by gender interaction was nonsignificant for all variables: reactive aggression, $F(2, 329) = 1.09, p > .05$; proactive aggression, $F(2, 329) = 1.01, p > .05$; peer group integration, $F(2, 329) = .02, p > .05$; peer intimacy, $F(2, 329) = 1.29, p > .05$; accuracy of self-perceptions on prosocial behaviours, $F(2, 329) = .75, p > .05$; accuracy of self-perceptions on noncompliant behaviours, $F(2, 329) = .80, p > .05$. In subsequent analyses data were collapsed across grades and reported accordingly.

Table 2

Means and Standard Deviations for Boys and Girls

Variable	Gender	
	Boys	Girls
	<i>M (SD)</i>	<i>M (SD)</i>
Reactive Aggression *	1.33 (.50)	1.13 (.31)
Proactive Aggression	1.10 (.29)	1.07 (.19)
Peer Group Integration	3.52 (.83)	3.59 (.80)
Peer Intimacy *	3.43 (.94)	3.92 (.91)
Self-Perception Accuracy (Prosocial Behaviours) *	.45 (.16)	.50 (.13)
Self-Perception Accuracy (Noncompliant Behaviours) *	.82 (.20)	.94 (.15)

Note. * Gender differences are significant at $p < .01$.

Table 3

Means and Standard Deviations by Grade

Variable	Grade		
	Grade 5	Grade 6	Grade 7
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Reactive Aggression	1.22 (.41)	1.25 (.44)	1.24 (.46)
Proactive Aggression	1.09 (.25)	1.08 (.22)	1.08 (.29)
Peer Group Integration	3.49 (.87)	3.55 (.71)	3.66 (.84)
Peer Intimacy	3.62 (.99)	3.72 (.88)	3.68 (.99)
Self-Perception Accuracy (Prosocial Behaviours)	.48 (.13)	.46 (.15)	.48 (.16)
Self-Perception Accuracy (Noncompliant Behaviours)	.87 (.19)	.89 (.19)	.86 (.19)

Note. All grade differences are nonsignificant, p 's > .05.

Correlations Among Accuracy of Social Self-Perceptions, Reactive and Proactive Aggression, Peer Intimacy, and Peer Group Integration

Pearson product-moment correlations were calculated to examine the relations among accuracy of social self-perceptions, reactive and proactive aggression, peer intimacy, and peer group integration for boys and girls (see Table 4). Similar procedures to examine gender differences have been followed by other researchers (e.g., J. Connor & Schonert-Reichl, 2001; Grills & Ollendick, 2002; Pakaslahti & Keltikangas-Jarvinen, 2000; Rennemark & Hagberg, 1999; Salmivalli et al., 2005; Schmitt & Kurdek, 1985). Following Pakaslahti and Keltikangas-Jarvinen (see also Grills & Ollendick, 2002; Schmitt & Kurdek, 1985) gender differences were assessed by comparing the boys' and girls' correlations via Fisher's z transformations. The two-tailed z -critical value is 1.96 for $p < .05$ and 2.58 for $p < .01$. Effect sizes for the correlations are considered using Cohen's (1992) criteria where $r = 0.1$ is a small effect, $r = 0.3$ is a medium effect, and $r = 0.5$ is a large effect.

As can be seen in Table 4, significant and positive correlations between reactive and proactive aggression (both with large effect sizes) were found for both boys and girls. Reactive aggression has a significant and negative correlation with accuracy of self-perceptions on noncompliant behaviours for both genders. That is, reactive aggression increases as students become less accurate at gauging their noncompliant behaviours. These effect sizes are medium for boys and girls. For proactive aggression, there was also a negative correlation with accuracy of self-perceptions on noncompliant behaviours (small-to-medium effect sizes). As proactive aggression increases, there is less accuracy in boys' and girls' self-perceptions of their noncompliant behaviours. Moreover, for boys

and girls, peer group integration and peer intimacy are significantly positively correlated and effect sizes are large. None of these correlations for boys and girls were significantly different from each other (all p 's $> .05$).

Correlations indicated that peer group integration was unrelated to reactive aggression, proactive aggression, accuracy of self-perceptions on prosocial behaviours, and accuracy of self-perceptions on noncompliant behaviours for boys and girls. Peer intimacy was not correlated with reactive aggression, proactive aggression, and accuracy of self-perceptions on noncompliant behaviours for both genders. Accuracy of self-perceptions on prosocial behaviours was not correlated with either reactive aggression or accuracy of self-perceptions on noncompliant behaviours for boys and girls. None of these correlations for boys and girls were significantly different from each other (all p 's $> .05$).

The correlations for boys and girls differed significantly ($p < .01$) for the relation between accuracy of self-perceptions on prosocial behaviours and proactive aggression. This correlation was only significant (and positive) for boys with a small-to-medium effect size indicating that greater accuracy in boys' self-perceptions of their prosocial behaviours accompanies increases in proactive aggression. Although the correlation between accuracy of self-perceptions on prosocial behaviours and peer intimacy was negatively correlated among boys (small effect size) and unrelated among girls, gender differences in these correlations were not found ($p > .05$).

The pattern of these correlations indicates that, as predicted, inaccurate self-perceptions of one's noncompliant behaviours were related to both reactive and proactive aggression for boys and girls. However, among boys only, it was more accurate self-

perceptions of their prosocial behaviours that was linked to problematic peer experiences involving increased proactive aggression and decreased peer intimacy.

Table 4

Correlations Among Accuracy of Social Self-Perceptions, Reactive and Proactive Aggression, Peer Intimacy, and Peer Group Integration

Variable	1.	2.	3.	4.	5.	6.
1. Reactive Aggression	—	.53**	-.02	-.07	-.05	-.31**
2. Proactive Aggression	.56**	—	.00	-.01	-.08 ^a	-.16**
3. Peer Group Integration	.03	.10	—	.66**	-.04	.10
4. Peer Intimacy	.06	.12	.66**	—	-.06	.12
5. Self-Perception Accuracy (Prosocial Behaviours)	.08	.24** ^a	-.13	-.16*	—	.09
6. Self-Perception Accuracy (Noncompliant Behaviours)	-.31**	-.20**	.03	-.02	.07	—

Note. Correlations for girls ($n = 160$) are presented above the diagonal.
Correlations for boys ($n = 175$) are presented below the diagonal.

* $p < .05$.

** $p < .01$.

^a Correlations for boys and girls differ significantly, $p < .01$.

Multiple Regression Assumptions and Hypotheses

To test whether peer group integration, peer intimacy, and accuracy of social self-perceptions would contribute to the prediction of (a) proactive aggression and (b) reactive aggression, multiple regression analyses were conducted as described below. The regression models for each of the two outcome variables were tested separately for boys and girls (see J. Connor & Schonert-Reichl, 2001 and Zarbatany, McDougall, & Hymel, 2000 for similar procedures).

Following Tabachnick and Fidell (2001), normality was examined through analysis of residuals after an initial regression run for each model. Histograms of the standardized residuals were inspected for the assumption of normality which stipulates that the residuals should have a normal bell shaped curve pattern or at least non-skewed distribution. Outliers were identified as standardized residuals with an absolute value greater than 3 (Garson, 2004). The maximum amount of outliers present in analyses was six boys and five girls. Cohen and Cohen (1983) explain that outliers constituting less than one or two percent of the total number of participants (n) can still be included. In the present study, outliers exceeded this percentage, representing three percent of the participants. However, after checking the original questionnaires to ensure that data from the outliers had been entered correctly, all cases were retained in further analyses.

In addition, two components of normality, namely skewness and kurtosis, were examined for all of the variables in the present study. Ideally, skewness and kurtosis values should be close to zero (Field, 2000). Variables are considered to have satisfied the assumption of normality if their skewness absolute values are less than 3 and kurtosis absolute values are less than 8 (Kline, 2005). The distribution of proactive aggression

was found to be skewed and kurtosed for boys (skewness = 3.54, kurtosis = 14.19) and girls (skewness = 3.66, kurtosis = 15.84). In regression, non-normality produces degraded solutions with biased coefficients and parameter estimates (Field, 2000). Non-normality can be dealt with through data transformations. However, a major limitation of using transformed scores is that results become difficult to interpret (Tabachnick & Fidell, 2001). Furthermore, Tabachnick and Fidell explain that with large samples (over 100 or 200) problems associated with skewness and kurtosis values that depart from zero decrease. In the present study, inverse transformations following Brendgen et al. (2001; see also Tabachnick & Fidell, 2001) were conducted on the L-shaped distribution of proactive aggression to reduce the skewness and kurtosis values for boys (skewness = 2.46, kurtosis = 5.10) and girls (skewness = 2.64, kurtosis = 6.29). Analyses conducted using original and transformed scores yielded the same outcomes for variable importance and unimportance. Results using the original scores are reported for ease of interpretability (see Appendix V for results using transformed scores).

The assumption of linearity was investigated through an inspection of the scatterplots for each paired combination among the independent and dependent variables (Tabachnick & Fidell, 2001). No u-shaped scatterplots representing curvilinear associations, which violate linearity, were evident.

To check for multicollinearity, the Variance Inflation Factor (VIF) for each explanatory variable was examined for all models after the regressions were ran. Because none of the VIF's were found to be over 10, Field (2000) would suggest that there is no cause for concern. These values, which were all under 2, indicate that none of the independent variables have a strong linear relationship with one another.

In all multiple regression analyses that follow, the independent variables that were entered in the model simultaneously were peer group integration, peer intimacy, accuracy of self-perceptions on prosocial behaviours, and accuracy of self-perceptions on noncompliant behaviours. These four variables were entered simultaneously because there is currently no theoretical argument for why either of the peer relationship or accuracy of social self-perception variables should be entered before any of the others. Moreover, the aim of these regression analyses is to assess the contribution of these variables to reactive and proactive aggression and to determine how much of this contribution is attributable to each of the variables. As Tabachnick and Fidell (2001) explain, such goals are addressed by simultaneous entry of the variables.

To partition a significant overall R^2 into portions attributable to each explanatory variable, the relative Pratt index was calculated following Thomas, Hughes, and Zumbo (1998) by multiplying each explanatory variable's beta-weight by its simple correlation with the dependent variable and then dividing by the total R^2 . The minimum relative Pratt index is $1/2p$, where p is the number of predictors in the model. In the present study, this value is $1/2(4)$ or .125. A relative Pratt index smaller than .125 indicates that a variable is unimportant.

Results of the regression analyses for girls and boys appear in Table 5 and Table 6, respectively. Effect sizes are considered using Cohen's (1992) criteria where $R^2 = .0196$ is a small effect, $R^2 = .1304$ is a medium effect, and $R^2 = .2592$ is a large effect.

In the first set of analyses, the dependent variable was proactive aggression. With all independent variables included, results of the multiple regression analysis were nonsignificant for girls. For girls, peer group integration, peer intimacy, accuracy of self-

perceptions on prosocial behaviours, and accuracy of self-perceptions on noncompliant behaviours were not significant predictors of proactive aggression.

For boys, the regression model containing all independent variables was significant, with a medium effect size accounting for 13% of the variance in proactive aggression. Results demonstrated that peer group integration, peer intimacy, accuracy of self-perceptions on prosocial behaviours, and accuracy of self-perceptions on noncompliant behaviours contributed to the prediction of proactive aggression among boys. Parameter level tests showed that the beta-weights of accuracy of self-perceptions on prosocial behaviours and accuracy of self-perceptions on noncompliant behaviours were significantly different from zero. Given that these values represent each predictor's partial slope, the beta-weight for accuracy of self-perceptions on prosocial behaviours indicated that boys' proactive aggression increases by .28 points for each unit of increase in their self-perception accuracy with all the other independent variables held constant. For accuracy of self-perceptions on noncompliant behaviours, proactive aggression drops by .22 points with every unit of increase in self-perception accuracy even after controlling for the other independent variables. According to the criterion of the minimum relative Pratt index, accuracy of self-perceptions on prosocial behaviours is the most important predictor of boys' proactive aggression followed by accuracy of self-perceptions on noncompliant behaviours. In contrast, peer intimacy and peer group integration were found to be unimportant as predictors of proactive aggression among boys.

In the second set of analyses, the dependent variable was reactive aggression. With all independent variables included, results of the multiple regression analysis were

significant for girls, with a small-to-medium effect size accounting for 10 % of the variance in their reactive aggression. For girls, peer group integration, peer intimacy, accuracy of self-perceptions on prosocial behaviours, and accuracy of self-perceptions on noncompliant behaviours significantly contributed to the prediction of reactive aggression. Parameter level tests showed that only the beta-weight of accuracy of self-perceptions on noncompliant behaviours was significantly different from zero. Girls' reactive aggression decreases by .30 points with every unit of increase in their accuracy of self-perceptions on noncompliant behaviours when all the other independent variables were held constant. Similarly, the relative Pratt Index suggested that only accuracy of self-perceptions on noncompliant behaviours was an important predictor of girls' reactive aggression while the remaining three variables contributed unimportant portions of the R^2 .

For boys, the regression model containing all independent variables was significant, with a medium effect size accounting for 12% of the variance in reactive aggression. Peer group integration, peer intimacy, accuracy of self-perceptions on prosocial behaviours, and accuracy of self-perceptions on noncompliant behaviours contributed to the prediction of reactive aggression among boys. Parameter level tests showed that only the beta-weight of accuracy of self-perceptions on noncompliant behaviours was significantly different from zero. Reactive aggression among boys drops by .32 points for each unit of increase in their accuracy of self-perceptions on noncompliant behaviours with all the other independent variables held constant. According to the criterion of the minimum relative Pratt index, accuracy of self-perceptions on noncompliant behaviours is the only important predictor of boys' reactive

aggression. In contrast, accuracy of self-perceptions on prosocial behaviours, peer group integration, and peer intimacy were found to be unimportant predictors of reactive aggression among boys.

Table 5

Results of Regression Analyses Predicting Proactive and Reactive Aggression Among Girls

	R^2	$F(4, 155)$	β	Zero-order Correlation	Pratt Index
Proactive Aggression Among Girls					
Variables Entered Simultaneously	.029	1.168			
Peer Group Integration			.020	.004	-
Peer Intimacy			-.004	-.006	-
Self-Perception Accuracy (Prosocial Behaviours)			-.063	-.077	-
Self-Perception Accuracy (Noncompliant Behaviours)			-.154	-.158*	-
Reactive Aggression Among Girls					
Variables Entered Simultaneously	.098	4.228**			
Peer Group Integration			.058	-.021	-.012
Peer Intimacy			-.077	-.074	.058
Self-Perception Accuracy (Prosocial Behaviours)			-.022	-.046	.010
Self-Perception Accuracy (Noncompliant Behaviours)			-.302**	-.308**	.949

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

Table 6

Results of Regression Analyses Predicting Proactive and Reactive Aggression Among Boys

	R^2	$F(4, 170)$	β	Zero-order Correlation	Pratt Index
Proactive Aggression Among Boys					
Variables Entered Simultaneously	.133	6.501*			
Peer Group Integration			.059	.097	.043
Peer Intimacy			.123	.120	.111
Self-Perception Accuracy (Prosocial Behaviours)			.283*	.241*	.513
Self-Perception Accuracy (Noncompliant Behaviours)			-.219*	-.200*	.329
Reactive Aggression Among Boys					
Variables Entered Simultaneously	.115	5.499*			
Peer Group Integration			.006	.029	.002
Peer Intimacy			.073	.063	.040
Self-Perception Accuracy (Prosocial Behaviours)			.115	.081	.081
Self-Perception Accuracy (Noncompliant Behaviours)			-.321*	-.314*	.876

* $p < .01$.

Discussion

The purpose of the present study was to examine the relations among accuracy of social self-perceptions, reactive and proactive aggression, peer intimacy, and peer group integration for boys and girls in early adolescence. Assessing the contribution of accuracy of social self-perceptions, peer intimacy, and peer group integration to reactive and proactive aggression was additionally an aim in the current investigation. What follows in the sections below is a discussion of the findings in terms of their implications, suggestions for future research, and limitations.

Relations Among Accuracy of Social Self-Perceptions and Reactive and Proactive Aggression

Previous research has linked children's aggressive behaviour to inaccurate social self-perceptions that do not correspond to ratings from others (e.g., Edens et al., 1999; Ledingham et al., 1982; Xiao & Matsuda, 1998). However, the existing body of work on accuracy of self-perceptions among aggressive children has been criticized for not adopting the distinction between reactive and proactive aggression that has been made in contemporary aggression research (Salmivalli, 2001).

The present study adds to previous research by providing partial support for an inverse connection between accuracy of social self-perceptions and both reactive and proactive aggression. Specifically, reactive aggression is higher among boys and girls who are less accurate at gauging their noncompliant behaviours. In fact, accuracy of self-perceptions on noncompliant behaviours was the only important variable included in the prediction of reactive aggression. No relation was uncovered between reactive aggression and accuracy of self-perceptions on prosocial behaviours for both genders. As well, peer

intimacy and peer group integration were unimportant in the prediction of reactive aggression.

With higher proactive aggression, there is less accuracy in boys' and girls' self-perceptions of their noncompliant behaviours. In contrast, greater accuracy in the self-perceptions of prosocial behaviours accompanied higher proactive aggression among boys only. Perhaps this has to do with the finding that accuracy of self-perceptions on prosocial behaviours was not significantly correlated with accuracy of self-perceptions on noncompliant behaviours for the boys and girls in this study. Others have similarly found accuracy of self-perceptions of positive (e.g., makes friends easily) and negative (e.g., bothers other kids) social behaviours to be only marginally related to each other (Cillessen & Bellmore, 1999). Although accuracy of self-perceptions on prosocial and noncompliant behaviours were both important predictors of boys' proactive aggression, the former was found to have the greatest importance. Meanwhile, peer intimacy and peer group integration were unimportant in the prediction of proactive aggression.

Various arguments have emerged that have tied both reactive and proactive aggression to inaccurate self-perceptions. For instance, Edens (1999; Edens et al., 1999) has proposed that inaccurate self-perceptions of competencies relative to others' evaluations would be characteristic of proactive aggression. Edens and his colleagues believe that proactive aggression is enacted to uphold a grandiose view of the self insofar as preying on victims bolsters one's sense of self. Salmivalli (2001) similarly conjectures that narcissistic characteristics like an unrealistic, aggrandized sense of self may accompany proactive aggression.

Others have additionally proposed a connection between reactive aggression and inaccurate views of the self. Salmivalli (2001) believes that Baumeister et al.'s (1996) threatened egotism hypothesis, in which aggressive behaviour is thought of as a response to a threat to one's favourable yet uncorroborated self-appraisals, can be applied in explaining reactive aggressive behaviour. Specifically, when situations are encountered that contradict an individual's inaccurate self-perception, he or she may aggress in a reactive manner to maintain this ill-founded view of the self. Furthermore, Schippell et al. (2003) suggest that reactive aggressive children may suppress attention toward information that diverges from their self-perceptions and thus, may not recognize their inappropriate social behaviours.

Although arguments have been put forth, to the knowledge of this author, no empirical evidence prior to this study has revealed whether reactive or proactive aggression are associated with less accurate self-perceptions that diverge from peer evaluations. What previous efforts have found was that there was a positive relationship between proactive aggression and maladaptive, inflated self-importance (narcissism) among fifth through eighth grade early adolescents (Washburn et al., 2004). Regarding reactive aggression, a study by Schippell et al. (2003) showed that among older children and adolescents, from the ages of 11 to 16, this type of aggressive behaviour was related to a distorted interpretation of social cues and inattentiveness toward such information. The contribution of the present study is that it demonstrated that both reactive and proactive aggression are connected to inaccuracies in self-perceptions of noncompliant behaviours during early adolescence. Findings additionally demonstrated that only

accuracy of social self-perceptions, but not peer intimacy or peer group integration, were important in the prediction of reactive and proactive aggression.

Burdett and Jensen (1983) cautioned that with limited empirically-derived information on the exact relationship between self-perception and aggression, practitioners in the past may have erroneously dealt with these two critical aspects of development in isolation from one another. Evidence from the present study suggests that interventions for both proactive and reactive aggression may benefit from addressing the inaccurate self-perceptions of noncompliant behaviours that these early adolescents are likely to have. According to Lochman, Coie, Underwood, and Terry (1993), initial decreases in the self-esteem of aggressive children may indicate improvements as they may be letting go of their grandiose views of themselves. Because of the increases in both reactive and proactive aggression which accompany an inability to admit to one's problematic social behaviours, early adolescents with highly discrepant self- and peer evaluations may be the most in need of treatment. However, it may be particularly challenging to deliver effective interventions to these early adolescents as they seem to be unaware of or unwilling to admit to their deviant behaviours.

In dealing with proactive aggression among boys, the impact of attempting to increase awareness of one's social behaviours may be less straightforward. Specifically, boys displaying greater proactive aggression seem to be well aware of how prosocial they are towards their peers. Taken together, results paint a picture of increasingly proactive aggressive boys as individuals who can accurately gauge their capabilities to behave in a prosocial manner but inaccurately report their negative social behaviours. According to Hawley (2003), there appears to be a group of aggressive children and adolescents who

employ both prosocial and coercive strategies (i.e., “bistrategic controllers”) to manipulate their peers. Similar to present findings, these individuals accurately report, relative to peer nominations, their ability to engage in prosocial behaviours, such as “doing something in return,” to influence their peers. Hawley additionally found that bistrategic controllers accurately report that they employ coercive strategies (“bully or push others”) to get what they want. Perhaps boys displaying proactive aggression are willing to admit to the use of aggressive behaviours for functional purposes but do not consider themselves to be noncompliant in the general sense.

In other streams of aggression research, self-reports of bullying (i.e., aggressive behaviours enacted by a more powerful bully who repeatedly torments less powerful victims) among adolescents in the eighth through tenth grades has been found to be related to beliefs and attitudes that justify bullying and place blame on the victims (Hymel, Rocke-Henderson, & Bonanno, 2005). In addition, Menesini, Sanchez, Fonzi, Ortega, Costabile, and Feudo (2003) have suggested that the grave consequences for the victims are distorted, perhaps even denied, by the bully and emphasis is instead placed on the positive consequences (i.e., personal benefits) that they anticipate to get by bullying others. In their study, fourth and eighth grade students were shown cartoon drawings of prototypical bullying situations. When asked about how they would feel if they were the bully in the depicted scenarios, individuals who were nominated by their peers as actual bullies were more likely to indicate that they would feel either proud or indifferent for reasons like “I would feel great because I got the attention of other children!” or “I would not feel guilty because it was a joke” (Menesini et al., 2003, p. 522). Such beliefs and attitudes reflect sociocognitive processes, referred to by Bandura (1999) as moral

disengagement, in which the activation of moral self-censuring is disengaged thereby allowing regular individuals to commit egregious acts against others. Even when individuals do not behave in accordance with their own moral standards, they can still be free from the distress of self-condemnation by employing various forms of moral disengagement such as those used by the bullies in the studies of Hymel et al. and Menesini et al. (for a complete description of moral disengagement tactics please refer to Bandura, 1999).

Some researchers believe that it is not only bullies, but also children displaying proactive aggression, who may not believe that personally prospering by harming others is morally wrong (Arsenio & Lemerise, 2001). From this perspective, it would seem that if children and adolescents do not take ownership for the gravity of their aggressive acts, there may be some cases in which this process of denial would require a distortion of one's self-perceptions of those behaviours. Perhaps reporting inaccurate self-perceptions of noncompliant behaviours is part of cognitive restructuring, a form of moral disengagement outlined by Bandura (1999; see also Hymel et al., 2005), in which deleterious conduct is framed in a positive light. In applying this logic to the present findings, it may be that proactive aggressive boys regard their prosocial behaviours or lack thereof (e.g., sharing versus not sharing), in comparison to more explicitly harmful behaviours such as starting fights, as relatively innocuous behaviours that do not require the use of cognitive restructuring. As such, they only display inaccuracies when assessing their enactment of the latter types of social behaviours. Future research should be directed at answering the lingering question about how proactive aggression among boys could be

related to inaccurate self-perceptions of their noncompliant behaviours and at the same time, accurate self-perceptions of their prosocial behaviours.

With respect to gender differences, the present study showed that the relation between inaccurate self-perceptions of noncompliant behaviours and reactive and proactive aggression was true for boys as well as girls. In contrast, the relation between increasingly accurate self-perceptions of prosocial behaviours and proactive aggression was only observed among boys. The approach of investigating the relations between these variables for both genders was advantageous given that previous efforts have tended to concentrate on aggression among boys (e.g., Day et al., 1992; Hubbard, Dodge, Cillessen, Coie, & Schwartz, 2001). Even among studies on children's aggressive behaviour that recruit both boys and girls, analyses have been collapsed across gender (e.g., Dodge & Coie, 1987; Dodge et al., 1997). When gender has been considered, studies in the past have found differences in boys' and girls' social self-perception accuracy (Cillessen & Bellmore, 1999) as well as reactive and proactive aggression (Salmivalli & Nieminen, 2002) with boys displaying less accurate self-perceptions and more aggressive behaviours than girls. In the present study, similar gender differences were uncovered with higher accuracy of self-perceptions on prosocial and noncompliant behaviours as well as lower reactive aggression among girls. However, the relation of these variables to each other only differ by gender when considering the connection between accuracy of self-perceptions on prosocial behaviours and proactive aggression but not when considering the association of accuracy of self-perceptions on noncompliant behaviours with either reactive or proactive aggression. Indeed, others have observed that gender differences in reactive and proactive aggression will not necessarily dictate

whether gender differences in the correlates of reactive and proactive aggression will be found (see D. F. Connor, Steingard, Anderson, & Melloni, 2003).

Limitations and Conclusion

Some limitations of the present study have already been mentioned. For instance, because the correspondence between self- and peer perceptions was calculated as an accuracy rather than directionality score, it cannot be said whether it is overestimated or underestimated self-perceptions of social competencies that is related to increases in reactive aggression, proactive aggression, and peer intimacy.

Another limitation of this study is the fact that the amount of variance accounted for in the majority of analyses was either small or medium. Hence, other important variables related to early adolescent's social self-perceptions, peer relationships, and reactive and proactive aggression remain to be identified. For instance, Edens (1999) recommends investigating social cognitive processes such as hostile attribution biases and moral disengagement to examine what role these factors play in determining the path by which views of one's self effect the enactment of reactive and/or proactive aggression. Others (e.g., Arsenio & Lemerise, 2001) have criticized that a limitation of research on reactive and proactive aggression is that the contribution of emotion processes are seldom examined. Salmivalli (2001) has suggested that future research could focus on how views of the self work together with emotion processes, such as inhibition or incitement of the expression of anger, to influence the enactment of aggression.

Finally, the correlational design of the present study, with all variables assessed at one point in time, limits interpretations of the findings in that claims cannot be made about causal or temporal relations among the variables. For example, the following

questions still remain: How do the variables of accuracy of social self-perceptions and reactive aggression come to be related? Do inaccurate self-perceptions of social competencies serve as a risk factor for reactive aggression? Such questions can only be answered through longitudinal studies in which changes in the variables are assessed across multiple time points.

In addition to these limitations, a cautionary note must be added that the external evaluations of participants' prosocial and noncompliant behaviours provided by their peers were nonetheless subjective perceptions of others. Ladd and Profilet (1996) explain that although peers have a great deal of exposure to children's behaviours, their reports may be tainted by emotions they develop towards their fellow classmates. Like peers, teachers can observe children's behaviours across diverse school environments but the relationships that they form with their students can bias their appraisals (Ladd & Profilet, 1996). Hughes et al. (1997) have recommended the use of blind observers who provide the most objective behaviour ratings by which self-perceptions can be compared. However, Ladd and Profilet caution that observers are restricted in the behaviours they are able to sample, usually making observations during narrow time periods and in confined settings. To compensate for the methodological weaknesses that accompany each of these various informants, future efforts should employ multiple sources of external evaluations when examining the accuracy of social self-perceptions among children and adolescents.

Despite limitations, the contribution of the present study is that it has revealed connections between the social perceptions and social experiences of early adolescents that have not previously been established in existing research. To recap, inaccurate self-

perceptions of one's noncompliant behaviours are related to both reactive and proactive aggression for boys and girls. However, among boys only, more accurate self-perceptions of their prosocial behaviours seem to be linked to problematic peer experiences involving higher proactive aggression and less peer intimacy. Given that some of these relations were the first of its kind, replications of this study are recommended in order to determine whether the associations among the variables can be observed across samples.

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Appendix I

Measure of Proactive and Reactive Aggression

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
1. Shows sympathy to someone who has made a mistake.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Will try to help someone who has been hurt.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Gets into many fights.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Threatens or bullies other children to get his/her own way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Volunteers to help someone clear up a mess that someone else has made.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. When mad at someone, tries to get others to dislike that person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Destroys things belonging to his/her family, or other children.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. When teased or threatened, he/ she gets angry easily and strikes back.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. If there is a quarrel or a dispute, will try to stop it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. When mad at someone, becomes friends with another as revenge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Offers to help other children (friend, brother or sister) who are having difficulty with a task.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Claims that other children are to blame in fight and feels like they started the trouble.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. 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	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. When mad at someone, says bad things behind the other's back.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Comforts a child (friend, brother or sister) who is crying or upset.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Plays mean tricks.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Threatens people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Spontaneously helps to pick up objects which another child has dropped (e.g., pencil, book).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Is cruel, bullies, or is mean to others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Uses physical force, or threatens to use force, to dominate other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

children.			
21. When mad at someone, says to others, "Let's not be with him/her."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. Kicks, bites, hits other children.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. Plans aggressive acts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. Helps other children (friend, brother or sister) who are feeling sick.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. Will invite bystanders to join in a game.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. Careful to protect self when aggressive.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27. Gets other children to gang up on a peer that he/she does not like.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. When mad at someone, tells the other one's secrets to a third person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29. Picks on smaller kids.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30. Has hurt others to win a game.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31. Hides aggressive acts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32. Takes the opportunity to praise the work of less able children.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33. Can control own behaviour when aggressive.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Note. Numbers 4, 20, and 27 are proactive aggression items. Numbers 8, 12, and 13 are reactive aggression items.

Appendix II

Measure of Self- and Peer Nominations

Peer Assessment of Social Behaviour

DIRECTIONS:

On the following pages, is a list of your classmates. We would like to get some information about your feelings about them and their behaviours. Please follow the directions carefully.

YOU MAY CIRCLE YOUR OWN NAME if you believe the description applies to you.

Appendix III

Measure of Peer Group Integration and Peer Intimacy

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

Note. Odd numbers are peer group integration items. Even numbers are peer intimacy items.

Appendix IV

Demographics Questionnaire

Time 1 Part 1

School #

Student ID

TELL US ABOUT YOURSELF

Name: _____

Grade: _____

1. Are you a boy or a girl? (CIRCLE ONE) BOY GIRL

2. What is your birthdate? _____
(month) (day) (year you were born)

3. Which of these adults do you live with MOST OF THE TIME? (Check all the adults you live with).

___ Mother ___ Grandmother ___ 1/2 Mom, 1/2 Dad

___ Father ___ Grandfather

___ Stepfather ___ Stepmother

___ Other adults (EXPLAIN, for example, aunt, uncle, mom's boyfriend, foster parents) _____

4. Do you have any brother(s) in your family? (include stepbrothers)

☐ Yes ☐ No

If yes, how old are they _____

5. Do you have any sister(s) in your family? (include stepsisters)

☐ Yes ☐ No

If yes, how old are they _____

6. What is the first language you learned at home? _____

7. Which language(s) do you speak at home? _____

8. Which language do you prefer to speak? _____

Appendix V

Results of Regression Analyses Using Transformed Scores

Results of Regression Analyses Predicting Proactive Aggression Among Girls

	R^2	$F(4, 155)$	β	Zero-order Correlation	Pratt Index
Variables Entered Simultaneously	.042	1.703			
Peer Group Integration			.028	.017	-
Peer Intimacy			.003	.006	-
Self-Perception Accuracy (Prosocial Behaviours)			-.091	-.107	-
Self-Perception Accuracy (Noncompliant Behaviours)			-.176*	-.181*	-

Note. For these analyses the inverse transformed scores of proactive aggression are used.

* $p < .05$.

Results of Regression Analyses Predicting Proactive Aggression Among Boys

	R^2	$F(4, 170)$	β	Zero-order Correlation	Pratt Index
Variables Entered Simultaneously	.126	6.134**			
Peer Group Integration			.094	.103	.077
Peer Intimacy			.073	.101	.059
Self-Perception Accuracy (Prosocial Behaviours)			.239**	.198**	.376
Self-Perception Accuracy (Noncompliant Behaviours)			-.258**	-.240**	.491

Note. For these analyses the inverse transformed scores of proactive aggression are used.

** $p < .01$.