

RELATIONAL AGGRESSION AND ACADEMIC PERFORMANCE IN ELEMENTARY SCHOOL

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To investigate the relationship between relational aggression and school performance, this study examined the relative and combined associations among relational aggression, overt aggression, and victimization and children's academic performance. Additionally this study examined the relative associations among relational and overt aggression and verbal and performance IQ. Participants in this study were a subset of the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development. The study included 1,067 children (50% male) assessed during fourth and fifth grade. Results indicated that for girls, relational aggression was negatively associated with school performance, while statistically controlling for both victimization and overt aggression. For boys, overt aggression was negatively related with school performance. Additional results indicated that for both girls and boys, victimization was negatively associated with school performance. © 2012 Wiley Periodicals, Inc.

Developmental researchers and school practitioners have confirmed across studies and observations the problems that arise when students engage in aggressive behavior. This research has shown the negative impact of antisocial, delinquent, and aggressive behavior upon grades and school engagement (Coie, Dodge, & Lynam, 2006). To further complicate matters, the combination of negative peer interactions and poor achievement puts children at risk for early school dropout and later delinquent behavior (Cairns, Cairns, & Neckerman, 1989; Tremblay, Masse, Perron, Leblanc, Schwartzman, & Ledingham, 1992). However, when researchers examined aggressors, the majority of these studies focused on physical aggression and overt antisocial behavior (Stipek & Miles, 2008; Underwood, 2003). School children, teachers, and parents know that children and adolescents also harass peers via exclusion or manipulation, behaviors that researchers have referred to as relational, social, or indirect aggression (Crick & Grotpeter, 1995; Lagerspetz, Bjorkqvist, & Peltonen, 1988; Underwood, 2003). This relatively new focus on the more indirect forms of children's aggression raises questions as to whether engaging in relational aggression has the same negative relationship with children's academic success, or more generally, children's cognitive abilities. The current study utilized data from the National Institute of Child Health and Human Development (NICHD, 2004) Study of Early Child Care and Youth Development to examine the relationship between grade-school-aged children's relational aggression and academic performance, verbal intelligence, and performance intelligence.

Relational aggression has been used to describe behaviors intended to harm others by causing damage to relationships (Crick & Grotpeter, 1995). This set of behaviors includes direct acts (such as a child threatening to terminate a friendship with another child for compliance in a social situation), indirect acts (such as spreading malicious rumors about a rival), and a mix of the two (such as social exclusion; Underwood, 2003). Engaging in these behaviors has been empirically linked to increases in social and psychological maladjustment, including loneliness, depression, and feelings of isolation (Crick, 1997; Crick, Ostrov, & Werner, 2006; Prinstein, Boergers, & Vernberg, 2001) as well as concurrent and future peer rejection (Crick, 1996; Tomada & Schneider,

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1997). Furthermore, a recent meta-analysis examining the relationship between indirect and direct aggression and maladjustment suggested that indirect aggression is more uniquely and more strongly tied to internalizing behaviors such as withdrawal, anxiety, and depression than are more direct forms of aggression (Card, Stucky, Sawalani, & Little, 2008).

Relational Aggression, School Performance, and Cognitive Ability

Despite the recent focus on relational aggression in school-age children, few studies have actually tackled the relationship between these behaviors and children's school performance. Existing literature demonstrates that correlates to engaging in relational aggression, namely peer rejection and problematic peer relationships, put children especially at risk for school dropout and academic failure (Hymel, Comfort, Schonert-Reichl, & McDougall, 1996; Parker & Asher, 1987), but little is known of the direct relationship between relational aggression and achievement. A handful of studies from preschool and elementary samples provides a somewhat contradictory picture of how engaging in relational aggression is related to academic grades and academic success correlates, such as verbal ability and social intelligence.

Several studies have found evidence that engaging in relational aggression or relational bullying is related to academic achievement and increased verbal ability. During early childhood, in a preschool study of language development, engaging in relational aggression was positively related to scores on both expressive and receptive vocabulary assessments (Bonica, Arnold, Fisher, Zeljo, & Yershova, 2003). Researchers focused on middle childhood found that engaging in self-reported relational bullying was predicted by higher academic achievement in a large elementary sample (Woods & Wolke, 2004). In many ways, this provides evidence for a movement that challenges the conception that relationally aggressive children have deficits in social-cognitive skills. This movement posits that relationally aggressive bullies and "ring leaders" are in fact quite socially intelligent and possess increased peer manipulation skills (Garandau & Cillessen, 2006; Sutton, Smith, & Swettenham, 1999). Socially intelligent individuals are able to behave in a way that allows them to achieve their desired social goals, and in conflict situations these individuals have the ability to select from a range of options, both peaceful and aggressive (Björkqvist, Österman, & Kaukiainen, 2000). Kaukiainen and colleagues (1999) reported that when 10-, 12-, and 14-year-olds were asked to report on their peers' aggression and social intelligence, only indirect forms of aggression positively and significantly related to social intelligence, whereas more direct and verbal forms of aggression did not.

Other research has suggested a more negative relationship between relational aggression and academic performance correlates. In a preschool sample where teachers rated students' aggressive behaviors, Estrem (2005) found that when controlling for physical aggression, relational aggression was negatively associated with expressive language skills. This was truer for girls in this sample than for boys. Additionally, Park et al. (2005) found that lower language abilities in preschool were related to a composite relational and overt aggression score in elementary school. For more general cognitive ability, a study that examined a sample of adolescent females found that low intelligence, along with other personality factors, predicted indirect and direct aggression (Rana & Malhotra, 2008). A negative relationship between relational aggression and intelligence measurements fits with attempts to conceptualize relational aggression as a female version of males' physical aggression (Heilbron & Prinstein, 2008). Indeed, many empirical studies have linked low receptive verbal skills, poorer performance task skills, and low general intelligence scores to increases in both concurrent physical aggression and later delinquency and criminality in adolescence and adulthood (Giancola & Zeichner, 1994; Huesmann, Eron, & Dubow, 2002; Huesmann, Eron, & Yarmel, 1987; Wong & Cornell, 1999). Researchers have been cautious, though. Using methods and theories related to physical aggression as models for relational aggression has been helpful. However, more empirical

studies that explicitly test relational aggression are needed before we assume these indirect behaviors are as deleterious as physical aggression, have similar functions, or are primarily “girls’ aggression” (Heilbron & Prinstein, 2008; Underwood, 2003).

A complication that arises in investigating the relationship between relational aggression and school achievement occurs when researchers use composite measures of aggression rather than separate constructs. For example, in a longitudinal study of adolescent popularity and social acceptance, students were peer-nominated as aggressive on items like “who gets mad easily” and “who are mean.” For adolescents who were highest on aggression, short-term increases in popularity were related to more absences and poorer grade point average (Schwartz, Gorman, Nakamoto, & McKay, 2006). Across studies of children and adolescents, indirect (relational and social) aggression and physical aggression are often moderately correlated ($r = .40-.80$), but more recent evidence suggests that they are indeed two discreet behavioral types with their own trajectories (Vaillancourt, Brendgen, Boivin, & Tremblay, 2003) and may be each uniquely related to maladjustment (Card et al., 2008). Therefore it is important to explicitly measure relational aggression. A limitation of these studies is that those that do measure relational aggression specifically do not measure academic achievement. Additionally, many of these studies deal with either a preschool sample, when individual differences in emerging language may restrict relational aggression, or an adolescent sample, when relational aggression may become too complex for outsiders to reliably identify. Lastly, these studies have not included an examination of peer victimization, which has both a theoretical and empirical link with academic achievement and childhood aggression.

Peer Victimization

One school experience that has been empirically related to both aggressive behavior and school achievement is being the target of aggression by peers. Theorists have conceptualized peer victimization as both an outcome and predictor of poor academic achievement (Olweus, 1978), such that children who had lower academic performance were more frequently targeted for victimization by peers (Schwartz, Farver, Chang, & Lee-Shin, 2002). Additionally, peer victimization puts children at risk for depression, anxiety, and low self-esteem (Hawker & Boulton, 2000), all of which could negatively influence school engagement and performance. A recent meta-analytic review of peer victimization has shown a small, yet significant, negative association between peer victimization and academic achievement for both boys and girls (Nakamoto & Schwartz, 2010). Additionally, in a study of elementary students, children who were classified by peer-ratings as both aggressors and targets of peer victimization were also at the highest risk for academic failure and emotional distress when compared to other groups (Schwartz, 2000). Because of these theoretical and empirical associations, research examining academic success and relational aggression should also include measures of victimization by peers.

The Current Study

The primary goal of this study was to clarify the relationship between relational aggression and school performance for elementary age students. Students in the fourth and fifth grade were chosen because social aggression in middle childhood may become more sophisticated and elaborate (Underwood, 2003) than at earlier ages, while at the same time, being not so complex as to become invisible to outsiders. Additionally, children in this age group are concerned with their standing in their same-gender peer group, as well as keeping emotional composure during conflicts (Gottman & Mettetal, 1986). The need to retain friend-group status while “keeping cool” during conflicts encourages more indirect forms of aggression such as exclusion, gossip, and manipulation (Underwood, 2003).

In examining the associations between relational aggression and school performance there are three possible, yet very different, relationships. Possible relationships are:

1. No relationship between achievement and relational aggression.
2. A negative relationship such that engaging in relational aggression is associated with poorer school achievement.
3. A positive relationship such that engaging in relational aggression is associated with higher school achievement.

The first possibility was that of an orthogonal relationship, such that any previous correlation in existing literature is actually spurious and better explained by a third variable. Because physical aggression and externalizing behaviors have been linked with academic underachievement (Hinshaw, 1992; Stipek & Miles, 2008) and are also moderately correlated with relational aggression (Vaillancourt et al., 2003), it was possible that statistically controlling for overt aggression would demonstrate a lack of covariance. Relational aggression may be less deleterious to grades than other types of externalizing because it has mixed relationships with speech/language difficulties or little of a relationship with hyperactivity. These problems may be underlying mechanisms explaining the link between other types of externalizing and academic underachievement (Hinshaw, 1992; Howlin & Rutter, 1987).

A second possibility was that engaging in relational aggression also leads to decreases in academic achievement. A parsimonious explanation of a negative association might be that engaging in manipulative aggression requires time and energy. Now spent, this time and energy cannot be devoted to schoolwork. Relationally aggressive behaviors become more complex with age, involving more and more individuals (Underwood, 2003). This relationship can become even more complicated after elementary school for perceived popular adolescents, who require more and more engagement in relational aggression to maintain their status (Cillessen & Mayeux, 2004). Additionally, engaging in relational aggression increases the risk for peer difficulties, including peer rejection, from preschool onward (Crick, Casas, & Mosher, 1997; McNeilly-Choque, Hart, Robinson, Nelson, & Olsen, 1996). Lastly, relational aggression, or subsequent problems with peers, may impact students' conflicts with a teacher (Jerome, Hamre, & Pianta, 2009; Stipek & Miles, 2008), academic engagement (Schwartz et al., 2006), or scholastic self-concept (Taylor, Davis-Kean, & Malanchuk, 2007).

Finally, the third possibility was that increases in relational aggression could be related to enhanced school performance. The majority of relationally aggressive behaviors, when operationalized for study, require the use of language. As language skills develop with related cognitive and social skills, relationally aggressive behaviors have the potential to become more sophisticated (Young, Boye, & Nelson, 2006). As already mentioned, research provides a mixed picture of the relationship between language, cognitive ability, and relational aggression. Still other studies find no relationships. Werner, Cassidy, and Juliano (2006) assessed theory-of-mind, social information-processing, and language abilities alongside observations of preschoolers' relational and physical aggression. Whereas social cognition had numerous associations with physical aggression, no significant relations emerged with relational aggression. The authors suggest this was likely due to the low base rate of observed relationally aggressive behaviors during preschool.

In examining the relationship between school performance and relational aggression, it was also important to include overt aggression and peer victimization in each model. Physical aggression and delinquency have been previously related to deficits in academic performance (Hinshaw, 1992) and are moderately correlated with relationally aggressive behaviors (Vaillancourt et al., 2003). Additionally, as reviewed previously, elementary students who are victimized by peers often earn lower grades (Nakamoto & Schwartz, 2010).

Because of the mixed findings concerning the relationship between relational aggression and verbal abilities for preschool and elementary age students (Bonica et al., 2003; Estrem, 2005; Park et al., 2005), a secondary aim of this study was to investigate the unique relationship between elementary students' verbal and performance intelligence and their relationally aggressive behaviors.

A final consideration of this study was assessing gender differences across these relationships. Relational aggression has often been described as "girls' aggression." Indeed, both scientific (Underwood, 2003) and popular books (Simmons, 2002; Wiseman, 2002) have been focused on relational aggression among girls. However, gender differences in empirical studies of relationally aggressive behaviors have been mixed (Merrell, Buchanan, & Tran, 2006). A recent meta-analysis by Archer (2004) found that the magnitude of the effect size for gender differences in studies of social, indirect, and relational aggression often depended on the type of method used and the age of participants. Whereas gender differences in the quantity of relational aggression may remain under debate for the near future, preschool studies have suggested that girls proportionately utilize more relational aggression than they do physical aggression, whereas boys may engage in both subtypes at similar rates (Crick, Casas, & Ku, 1999; Nelson, Robinson, & Hart, 2005). Because previous studies indicate that variables may vary by gender, analyses will be conducted for the entire sample and separately for males and females.

METHOD

Participants

Mothers and children who participated in the NICHD Study of Early Child Care and Youth Development were recruited by the NICHD Early Child Care Research Network (ECCRN) while still in the hospital after birth (see NICHD ECCRN, 1997, and <http://secc.rti.org> for details). This larger dataset included 1,364 families (52% male participant children), with mothers at least 18 years of age.

The analyses for the current study utilized a subset of 1,067 families. Two hundred and ninety-seven (21.77%) participant children were excluded from the current study because they lacked data for the fourth and fifth grade. Of these 1,067 participant children, 536 (50.23%) were male. Approximately 77% of participants' mothers indicated their child was Caucasian, 12% African American, 5% Latino/Latina, and 7% of another ethnicity, including American Indian, Asian American, Pacific Islander, or "other." Nineteen percent received public assistance, and 10% of mothers were without a high school education. Participant families were recruited from 31 hospitals throughout the continental United States and reflected the ethnic diversity of those catchment areas.

Missing Data

Two hundred and ninety-five (28%) participant children had missing data on at least one of the three variables used in the analyses (relational aggression, academic achievement, or IQ). When compared, no significant differences in gender, ethnicity, or maternal-reported income emerged between participant children with at least one missing data point and those with no missing data. Missing data were imputed with maximum likelihood values using the Expectation–Maximization algorithm (MVA in SPSS 19). Single imputation provides an improvement over traditional approaches, such as listwise or pairwise deletion, by producing less biased estimates (Acock, 2005).

Teacher Measures

Prior research has effectively utilized teacher ratings of students' peer relations in grade school settings, specifically aggressive behavior (Cairns, Cairns, Neckerman, Ferguson, & Garipey, 1989). Teachers' ratings of aggression have been shown to be correlated with peer ratings in middle

childhood, r 's ranging from .63 to .73 (Ledingham, Younger, Schwartzman, & Bergeron, 1982; Pekarik, Prinz, Liebert, Weintraub, & Neale, 1976). Similar measures that have examined relational aggression (Crick, 1996) have found that teacher reports of relation aggression correlate with peer nominations of relational aggression (.57 for boys and .63 for girls).

Relational Aggression

As part of a larger measure concerning children's behavior with peers, teachers completed a subscale for relational aggression that included five items from the Children's Social Behavior Scale-Teacher Form (Crick, 1996). Teachers were asked to rate each child based on given descriptions as "0 – Not True," "1 – Sometimes True," or "2 – Often True." Item examples included "When mad at a peer, gets even by excluding the peer from the group" and "Tries to exclude certain peers from peer group activities." Alpha coefficients were .84 and .85 for fourth and fifth grades respectively.

Overt Aggression

The subscale for overt aggression, derived from the Child Behavior Scale (Ladd & Profilet, 1996), included nine items asking teachers to rate each child based on given descriptions as "0 – Not True," "1 – Sometimes True," or "2 – Often True." This wording was adapted from the original "1 = Doesn't Apply," "2 = Applies Sometimes," and "3 = Certainly Applies" (Ladd & Profilet, 1996). An item example includes "Threatens other children." Alpha coefficients were .84 and .85 for fourth and fifth grades respectively. In previous research, teacher reports of aggressive behaviors using this measure have been positively correlated with classroom observations and peer nominations of aggression (Ladd & Profilet, 1996).

Peer Victimization

The subscale for teacher ratings of peer victimization was adapted from the self-report Peer Victimization Scale (Kochenderfer & Ladd, 1996). Teachers rated students across seven items describing peer victimization as "0 – Not True," "1 – Sometimes True," or "2 – Often True." Sample items included "Is called names by peers" and "Is pushed around by other children." Alpha coefficients were .90 and .89 for fourth and fifth grades respectively. In previous research using this scale, students identified as targets of peer victimization were observed in classrooms to experience higher levels of peer aggression, and scores on this scale were negatively associated with peer acceptance (Kochenderfer & Ladd, 1996).

School Performance

In order to standardize grades across multiple school districts and school types, current school performance was reported by teachers on a Mock Report Card. Teachers rated students' performance across six areas (reading, oral language, written language, math, social studies, and science) using a 5-point scale ("1 = below grade level," "2 = needs improvement," "3 = satisfactory," "4 = very good," and "5 = excellent"). For the current study, a school performance subscale was created using the mean of teachers' ratings across each of these areas. Samples used during creation of this composite had alphas ranging from .92 to .94 (Vandell & Pierce, 1998, as used in Pierce, Hamm, & Vandell, 1999). Gresham, Elliot, and Evans-Fernandez (1993) used a similar grades composite and found this performance score to be associated with achievement test scores in a third- and fourth-grade sample (r 's from .60 to .68 respectively).

LABORATORY MEASURE

Cognitive Ability

General cognitive ability was assessed through the use of the Wechsler Abbreviated Scale of Intelligence (WASI), an abbreviated test of intellectual functioning for a broad age range. The WASI was administered to participant children during a laboratory visit scheduled in their fourth-grade year. Research assistants were trained in the administration of this scale at their research site; however, prior to certification, each assistant had to submit two videos of “passing administrations” to an offsite, independent evaluator. In this study, four subtests were administered: Vocabulary (participants named objects and defined words), Block Design (participants copied abstract designs using blocks), Similarities (participants described similarities between two concepts), and Matrix Reasoning (participants were assessed on nonverbal reasoning and visual-information processing). A Verbal IQ score was computed from the Vocabulary and Similarities subtest, and a Performance IQ score was computed from the Block Design and Matrix Reasoning. The WASI has been normed on a large, diverse sample of 2,245 participants, and has demonstrated reliability and validity (Saklofske, Caravan, & Schwartz, 2000; Wechsler, 1999).

PROCEDURES

The present study utilized Phase 3 data from the NICHD Early Child Care Research Network (ECCRN, 2004), in which participant children were followed from second through sixth grade. During participants’ fourth-grade year, study children, along with parents and a friend, attended a laboratory visit at one of the network’s national collection sites. During the lab visit, participant children completed the WASI. Additionally, annual teacher reports from fourth and fifth grades were utilized. Prior to Phase 3 data collection, parents were contacted to obtain permission for the researchers to contact teachers. Each year, participating teachers were asked to complete a booklet containing a host of adjustment measures for each child and were compensated \$50 for completing each booklet. School visits, including observations, were completed in alternating years during the spring (fifth grade). In years not containing school visits, teachers were mailed packets (fourth grade, NICHD, 2004). Full details of data collection for each year can be found at <http://secc.rti.org>.

RESULTS

Descriptive Statistics

Table 1 presents the means, standard deviations, and ranges of the constructs used in all analyses for the sample, and also by gender. The distributions for current school performance were negatively skewed, with Pearson skewness coefficients for fourth and fifth grades from $-.4$ to $-.56$ respectively. The distributions of teacher-rated relational aggression (1.54 and 1.55) and overt aggression (2.04 and 1.82) were positively skewed for fourth and fifth grade. Analyses using log transformations for the following analyses had no influence on the results.

Interconstruct and Intergrade Correlations

To examine initially the relationships between variables, correlations were computed between each construct within each grade (Table 2). As predicted, for each grade level, student academic performance was positively related to cognitive ability and negatively related to the peer problems of relational aggression, overt aggression, and victimization.

Variables were also stable from fourth to fifth grade, such that school performance and overt aggression were stable with significant correlations of .81 and .66 respectively, and relational

Table 1

Means (Standard Deviations) and Ranges for Relational Aggression, Overt Aggression, Peer Victimization, School Performance, Verbal IQ, and Performance IQ, by Grade and Gender

	Total	Boys (<i>n</i> = 536)	Girls (<i>n</i> = 531)	Ranges
Fourth grade				
Relational	.32 (.39)	.30 (.35)	.35 (.42)	0.00–2.00
Overt	.26 (.40)	.34 (.46)	.17 (.31)	0.00–2.00
Victimization	.16 (.29)	.19 (.33)	.12 (.25)	0.00–2.00
School performance	3.39 (.92)	3.30 (.94)	3.48 (.90)	1.00–5.00
Fifth grade				
Relational	.34 (.40)	.30 (.37)	.37 (.44)	0.00–1.80
Overt	.28 (.43)	.36 (.47)	.19 (.37)	0.00–2.00
Victimization	.17 (.31)	.20 (.34)	.13 (.27)	0.00–1.86
School performance	3.47 (.94)	3.36 (.96)	3.60 (.90)	1.00–5.00
Cognitive tasks				
Verbal IQ	107.54 (14.67)	106.15 (14.39)	108.94 (14.82)	59–149
Performance IQ	104.25 (14.38)	104.78 (14.70)	103.71 (14.04)	66–145

Table 2

*Correlations Among Constructs, by Grade (*n* = 1,067)*

	Relational	Overt	Vict	School Performance	Verbal IQ
Fourth grade					
Overt	.52*	.40*	–.24*	.60*	.55*
Victimization	.28*	–.25*	–.12*	.53*	
School performance	–.18*	–.17*	–.13*		
Verbal IQ	–.15*	–.14*			
Performance IQ	–.13*				
Fifth grade					
Overt	.60*	.43*	–.28*	.62*	.55*
Victimization	.35*	–.24*	–.15*	.53*	
School performance	–.17*	–.23*	–.13*		
Verbal IQ	–.19*	–.12*			
Performance IQ	–.13*				

**p* < .0001.

aggression and peer victimization were moderately stable with significant correlations of .37 and .37 respectively.

Unique Associations Among Peer Victimization, Overt Aggression, and Relational Aggression and School Performance

Hierarchical linear regressions were conducted to examine whether relational aggression added significantly explained variance in fourth- and fifth-grade school performance above and beyond peer victimization and overt aggression. For both concurrent and 1-year models, fourth-grade victimization was entered in the first step, overt aggression in the second step, and relational aggression in the third step to indicate incremental explained variance. R^2 and $r^2\Delta$ are listed in Table 3 for the entire sample and separate models for boys and girls.

Table 3
Unique Contributions of Fourth-Grade Victimization, Overt Aggression, and Relational Aggression to the Prediction of Fourth- and Fifth-Grade School Performance (n = 1,067)

	Step 1: R ² for Victimization	Step 2: r ² Δ for Overt	Step 3: r ² Δ for Relational
Whole sample			
Fourth grade	.05*	.03*	.00
Fifth grade	.05*	.02*	.00
Boys			
Fourth grade	.07*	.04*	.00
Fifth grade	.05*	.03*	.00
Girls			
Fourth grade	.03*	.01	.02*
Fifth grade	.04*	.00	.01

*p < .001.

Table 4
Relative Contributions of Fourth-Grade Victimization, Overt Aggression, and Relational Aggression to the Predictions of Fourth- and Fifth-Grade School Performance

	Victimization	Overt Aggression	Relational	Total R ²
Fourth-grade performance				
Boys	-.16(-.18)*	-.18(-.23)*	.01(.01)	.11*
Girls	-.12(-.13)*	-.03(.03)	-.13(-.15)*	.06*
Fifth-grade performance				
Boys	-.13(-.14)*	-.16(-.20)*	-.00(-.00)	.08*
Girls	-.15(-.16)*	.00(.01)	-.10(-.12)*	.05*

Note. Numbers are semipartial correlations (and βs).

*p < .01.

As presented in Table 3, fourth-grade victimization explained a significant portion of the variance for both fourth- and fifth-grade school performance. This was true for both boys and girls. When added in step 2, fourth-grade overt aggression only added significantly to the prediction of fourth- and fifth-grade school performance for boys. Conversely, for girls, overt aggression did not add significantly to this prediction. In step three, when relational aggression was added, only for girls did relational aggression in fourth grade modestly yet significantly add to the prediction of school performance in fourth grade.

Relative Contributions of Peer Victimization, Overt Aggression, and Relational Aggression to School Performance

In examining the relative contributions of fourth-grade victimization, overt aggression, and relational aggression in multiple regressions, it was possible to determine which variable most strongly associated with fourth- and fifth-grade school performance after controlling for their shared variability. These results are shown in Table 4, which lists the semipartial correlation coefficients and standardized regression coefficients (β) for the three peer behaviors when entered together in one step of the multiple regression. As shown in Table 4, separate regressions were conducted for predicting fourth- and fifth-grade school performance, and for gender.

Table 5
Partial Correlations: Measures of Cognitive Ability With Aggression Subtypes and Victimization

	Partial <i>r</i> : Overt Aggression		Partial <i>r</i> : Relational Aggression		Partial <i>r</i> : Victimization	
	Fourth Grade	Fifth Grade	Fourth Grade	Fifth Grade	Fourth Grade	Fifth Grade
Performance IQ						
Boys	-.12	-.06	-.04	-.05	-.10	-.09
Girls	.02	-.01	-.07	-.05	-.07	-.07
Verbal IQ						
Boys	-.06	-.08	-.08	-.05	-.02	-.07
Girls	-.08	-.15*	-.08	-.09	-.07	-.01

* $p < .001$.

Across each analysis, models accounted for a modest yet significant portion of the variance in predicting both fourth- and fifth-grade school performance (R^2 s ranging from .05 to .11). Of the variables that predicted school performance, peer victimization was the most consistent contributor of unique variance in predicting both boys' and girls' school performance, such that increased teacher reports of peer victimization were negatively associated with academic performance. Unlike peer victimization, differences emerged for boys and girls on aggression variables. For girls only, relational aggression was significantly and negatively associated with concurrent and future school performance. Alternately, for boys, only overt aggression was significantly and negatively associated with concurrent and future school performance.

Associations Among Peer Victimization, Overt Aggression, and Relational Aggression and Verbal and Performance Measures

To examine the associations between Verbal IQ, Performance IQ, and both forms of aggression and peer victimization, correlation analyses were conducted between IQ measures and each form peer variable. Because of the moderate intercorrelations between relational aggression, overt aggression, and peer victimization, correlations involving relational aggression were computed while controlling for both overt aggression and peer victimization. Partial correlations are reported in Table 5.

No significant associations emerged in fourth grade. One significant association emerged in fifth grade, such that verbal IQ measured during the study child's fourth-grade year was negatively associated with engaging in teacher-rated overt aggression.

DISCUSSION

This study examined the association between grade school students' relational aggression and academic performance. To examine the unique association between relational aggression and school performance, analyses also included overt aggression and peer victimization. The study also examined the relations between both types of aggression and cognitive ability, as measured on a well-normed assessment. Lastly, this study assessed gender differences in these relationships.

Initial analyses indicated that negative associations existed between not only school performance and relational aggression, but also for school performance and both overt aggression and peer victimization. Further analyses consistently indicated that peer victimization is uniquely and negatively related to school performance. In fact, of the peer variables rated by teachers, peer victimization uniquely accounted for the greatest portion of variance within each model. This was true for both concurrent school performance and 1-year later school performance. Effect sizes reported

in the current study aligned with Nakamoto and Schwartz's (2010) recent meta-analytic review of victimization's association with academic achievement. Although not an aim of this study, this replication again highlights that poor relations with peers are a risk factor for academic problems, and that victimization, whether at school, home, or the community, is highly problematic (Holt, Finkelhor, & Kantor, 2007).

In addition to the aforementioned replication, the main goal of this study was to examine the unique relationship of relational aggression to academic performance in elementary age students when overt aggression and peer victimization were statistically controlled. Whereas a previous examination of relational bullying in elementary school indicated that engaging in relationally aggressive behavior was positively related to academic success (Woods & Wolke, 2004), the current study displayed a different pattern. For boys, engaging in overt aggression in the fourth grade uniquely predicted poorer school performance in both fourth and fifth grades. This pattern has been found in studies examining physical aggression before for both genders (Hinshaw, 1992; Stipek & Miles, 2008). However, in the current study, when controlling for relational aggression, only boys' overt aggression was significantly associated with school performance. This may best be explained by the low incidence rate of girls' overt forms of aggression as reported by teachers.

A different pattern emerged for girls; engaging in relational aggression in the fourth grade uniquely predicted poorer school performance in both fourth and fifth grades. Boys, however, showed no significant association between these variables when overt aggression was controlled. Unlike the more uncommon teacher reports of overt aggression perpetrated by girls, teachers' reports of boys using relational aggression were not uncommon. This finding demonstrates that for girls, engaging in these indirect behaviors is a risk factor for underachievement, above and beyond engaging in overt aggression or experiencing peer victimization. Whereas engaging in relational aggression may show advanced social intelligence and sophisticated knowledge of peer interactions (Björkqvist et al., 2000; Garandau & Cillessen, 2006; Kaukiainen et al., 1999), it is clearly linked to lower performance in classrooms for girls.

A goal for future research in this area is explaining the relationship between relational aggression and academic performance. Hinshaw (1992) outlines possible explanations for the associations between externalizing behaviors and school underachievement: (a) a bidirectional relationship exists between externalizing and underachievement, (b) externalizing behavior causes academic problems, (c) academic underachievement affects externalizing behaviors, or (d) a third variable affects both externalizing and school performance. Testing similar pathways will help us understand and explain the negative association between engaging in relational aggression and school performance, especially for girls.

These findings are especially pertinent for school practitioners. As many peer-relations researchers contemplate and discuss the conceptualization of constructs like social, indirect, and relational aggression, there will be many scholarly and applied publications that question our current views of these behaviors. Empirical research has established that aggressive children may not be as unskilled in social cognition as we have assumed. The links between social intelligence and indirect aggression are stronger than those between social intelligence and verbal aggression (Björkqvist et al., 2000). And as Garandau and Cillessen (2006) have argued, it is the skillful and socially intelligent ring leaders that can manipulate both cohesive and discordant groups. Reviews of literature have also illustrated that there may be very real social rewards and benefits for engaging in relational aggression at various ages (Heilbron & Prinstein, 2008). Although all of these discussions are emerging, it will be important for practitioners to recognize that engaging in relational aggression has been linked to maladjustment, specifically peer rejection and internalizing problems (Card et al., 2008). Relational aggression is also as hurtful to some children as physical aggression (Galen & Underwood, 1997). The current study underscores the risk of engaging in this behavior during grade

school, especially for girls. Until a consensus is reached that relational aggression has clear benefits or is normative, programs designed to intervene and reduce relationally aggressive behaviors and relational bullying should be developed, funded, and enacted.

The current study has several notable strengths. Phase 3 of this NICHD study includes a large sample, recruited nationally from several diverse ethnic groups. The large sample size allowed for the current study to look for not only moderate effects, but also modest associations that provide insight into multivariate models. The current study utilized specific measures of overt and relational aggression, absent in some previous research, in addition to multicontent reports of academic success. Lastly, the developed models included variables with known associations to academic performance, including overt aggression and peer victimization.

The results of this study should also be considered in light of several weaknesses. Teacher reports were used exclusively for reports of student behavior and academic performance. This would normally increase the risk of shared-method or shared-reporter variance. However, multiyear assessments ensured that multiple informants were used for both peer behaviors and academic performance for each participant. Another large question is whether teachers can provide a valid assessment of relational aggression. The behaviors defined by social, relational, and indirect aggression are often, by design, circuitous and insidious, which makes them difficult to observe. As children mature, these behaviors become more complex and more hidden. To alleviate this worry, researchers have examined peer reports of relational aggression, often considered the “gold-standard,” and teacher reports and found a moderately high level of agreement (Crick, 1996).

In conclusion, the current study contributes to the literature in several ways. One novel contribution of this study is that relational aggression in grade school years is related to academic problems for girls, beyond the contributions of both overt aggression and victimization. These findings add to the existing literature by demonstrating the many deleterious effects of engaging in relational aggression, especially for girls. These findings also compound the urgency to develop and continually refine intervention and prevention programs for school-age relational aggression; these behaviors are both hurtful and maladaptive, and cannot be ignored or marginalized.

REFERENCES

- Acock, A. (2005). Working with missing values. *Journal of Marriage and Family*, 67, 1012–1028.
- Archer, J. (2004). Sex differences in aggression in real-world settings: A meta-analytic review. *Review of General Psychology*, 8, 291–322.
- Björkqvist, K., Österman, K., & Kaukiainen, A. (2000). Social intelligence - empathy = aggression? *Aggression and Violent Behavior*, 5(2), 191–200.
- Bonica, C., Arnold, D., Fisher, P., Zeljo, A., & Yerushova, K. (2003). Relational aggression, relational victimization, and language development in preschoolers. *Social Development*, 12(4), 551–562.
- Cairns, R., Cairns, B., & Neckerman, H. (1989). Early school dropout: Configurations and determinants. *Child Development*, 60, 1437–1452.
- Cairns, R., Cairns, B., Neckerman, H., Ferguson, L., & Garipey, J. (1989). Growth and aggression: 1. Childhood to early adolescence. *Developmental Psychology*, 25, 320–330.
- Card, N., Stucky, B., Sawalani, G., & Little, T. (2008). Direct and indirect aggression during childhood and adolescence: A meta-analytic review of gender differences, intercorrelations, and relations to maladjustment. *Child Development*, 79, 1185–1229.
- Cillensen, A., & Mayeux, L. (2004). From censure to reinforcement: Developmental changes in the association between aggression and social status. *Child Development*, 75, 147–163.
- Coie, J., Dodge, K., & Lynam, D. (2006). Aggression and antisocial behavior, social, emotional, and personality development. In N. Eisenberg (Ed.), *Handbook of child psychology* (pp. 719–788). New York: Wiley.
- Crick, N. (1996). The role of overt aggression, relation aggression, and prosocial behavior in the prediction of children's future social adjustment. *Child Development*, 67, 2317–2327.
- Crick, N. (1997). The role of overt aggression, relational aggression, and prosocial behavior in children's social adjustment. *Child Development*, 68, 610–617.

- Crick, N., Casas, J., & Ku, H. (1999). Relational and physical forms of peer victimization in preschool. *Developmental Psychology, 35*, 376–385.
- Crick, N., Casas, J., & Mosher, M. (1997). Relational and overt aggression in preschool. *Developmental Psychology, 33*(4), 589–600.
- Crick, N., & Grotpeter, J. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development, 66*, 710–722.
- Crick, N., Ostrov, J., & Werner, N. (2006). A longitudinal study of relational aggression, physical aggression, and children's social-psychological adjustment. *Journal of Abnormal Child Psychology, 34*, 127–138.
- Estrem, T. (2005). Relational and physical aggression among preschoolers: The effect of language skills and gender. *Early Education and Development, 16*(2), 207–231.
- Galen, B., & Underwood, M. (1997). A developmental investigation of social aggression among children. *Developmental Psychology, 33*, 589–600.
- Garandeau, C., & Cillessen, A. (2006). From indirect aggression to invisible aggression: A conceptual view on bullying and peer group manipulation. *Aggression and Violent Behavior, 11*(6), 612–625.
- Giancola, P., & Zeichner, A. (1994). Intellectual ability and aggressive behavior in nonclinical-nonforensic males. *Journal of Psychopathology and Behavioral Assessment, 16*(2), 121–130.
- Gottman, J., & Mettetal, G. (1986). Speculations about social and affective development: Friendship and acquaintanceship through adolescence. In J. Gottman & J. Parker (Eds.), *Conversations with friends: Speculations on affective development* (pp. 192–237). New York: Cambridge University Press.
- Gresham, F., Elliot, S., & Evans-Fernandez, S. (1993). *Student Self-Concept Scale Manual*. Circle Pines, MN: American Guidance.
- Hawker, D., & Boulton, M. (2000). Twenty years' research on peer victimization and psychosocial maladjustment: A meta-analytic review of cross-sectional studies. *Journal of Child Psychology and Psychiatry, 41*, 441–455.
- Heilbron, N., & Prinstein, M. (2008). A review and reconceptualization of social aggression: Adaptive and maladaptive correlates. *Clinical Child and Family Psychology Review, 11*(4), 176–217.
- Hinshaw, S. (1992). Externalizing behavior problems and academic underachievement in childhood and adolescence: Causal relationships and underlying mechanisms. *Psychological Bulletin, 111*, 127–155.
- Holt, M., Finkelhor, D., & Kantor, G. (2007). Multiple victimization experiences of urban elementary school students: Associations with psychosocial functioning and academic performance. *Child Abuse & Neglect, 31*(5), 503–515.
- Howlin, P., & Rutter, M. (1987). The consequences of language delay for other aspects of development. In W. Yule & M. Rutter (Eds.), *Language development and disorders* (pp. 271–294). Oxford, England: MacKeith.
- Huesmann, L., Eron, L., & Dubow, E. (2002). Childhood predictors of adult criminality: Are all risk factors reflected in childhood aggressiveness? *Criminal Behaviour and Mental Health, 12*(3), 185–208.
- Huesmann, L., Eron, L., & Yarmel, P. (1987). Intellectual functioning and aggression. *Journal of Personality and Social Psychology, 52*(1), 232–240.
- Hymel, S., Comfort, C., Schonert-Reichl, K., & McDougall, P. (1996). Academic failure and school dropout: The influence of peers. In J. Juvonen & K. Wentzel (Eds.), *Social motivation: Understanding children's school adjustment* (pp. 313–345). New York: Cambridge University Press.
- Jerome, E., Hamre, B., & Pianta, R. (2009). Teacher-child relationships from kindergarten to sixth grade: Early childhood predictors of teacher-perceived conflict and closeness. *Social Development, 18*, 915–945.
- Kaukiainen, A., Bjorkqvist, K., Lagerspetz, K., Osterman, K., Salmivalli, C., Rothberg, S., et al. (1999). The relationships between social intelligence, empathy, and three types of aggression. *Aggressive Behavior, 25*, 81–89.
- Kochenderfer, B., & Ladd, G. (1996). Peer victimization: Cause or consequence of school maladjustment? *Child Development, 67*, 1305–1317.
- Ladd, G., & Profilet, S. (1996). The child behavior scale: A teacher-report measure of young children's aggressive, withdrawn, and prosocial behaviors. *Developmental Psychology, 32*, 1008–1026.
- Lagerspetz, K., Bjorkqvist, K., & Peltonen, T. (1988). Is indirect aggression typical of females? Gender differences in aggressiveness in 11- to 12-year-old children. *Aggressive Behavior, 14*, 403–414.
- Ledingham, J., Younger, A., Schwartzman, A., & Bergeron, G. (1982). Agreement among teacher, peer, and self-ratings of children's aggression, withdrawal, and likability. *Journal of Abnormal Child Psychology, 10*, 363–372.
- McNeilly-Choque, M., Hart, C., Robinson, C., Nelson, L., & Olsen, S. (1996). Overt and relational aggression on the playground: Correspondence among different informants. *Journal of Research in Childhood Education, 11*, 47–67.
- Merrell, K., Buchanan, R., & Tran, O. (2006). Relational aggression in children and adolescents: A review with implications for school settings. *Psychology in the Schools, 43*, 345–360.
- Nakamoto, J., & Schwartz, D. (2010). Is peer victimization associated with academic achievement? A meta-analytic review. *Social Development, 19*(2), 221–242.

- National Institute of Child Health and Human Development. (2004). NICHD study of early childcare and youth development: Phase III, 2000–2004. Inter-University Consortium for Political and Social Research.
- National Institute of Child Health and Human Development Early Child Care Research Network. (1997). Familial factors associated with the characteristics of nonmaternal care for infants. *Journal of Marriage and the Family*, 59, 389–408.
- Nelson, D., Robinson, C., & Hart, C. (2005). Relational and physical aggression of preschool-age children: Peer status linkages across informants. *Early Education and Development*, 16, 115–139.
- Olweus, D. (1978). *Aggression in the schools: Bullies and whipping boys*. Washington, DC: Hemisphere Publishing Corporation.
- Park, J., Essex, M., Zahn-Waxler, C., Armstrong, J., Klein, M., & Goldsmith, H. (2005). Relational and overt aggression in middle childhood: Early child and family risk factors. *Early Education and Development*, 16(2), 233–256.
- Parker, J., & Asher, S. (1987). Peer relations and later personal adjustment: Are low-accepted children at risk? *Psychological Bulletin*, 102, 357–389.
- Pekarik, E., Prinz, R., Liebert, D., Weintraub, S., & Neale, J. (1976). The pupil evaluation inventory: A sociometric technique for assessing children's social behavior. *Journal of Abnormal Child Psychology*, 4, 83–97
- Pierce, K., Hamm, J., & Vandell, D. (1999). Experiences in after-school programs and children's adjustment in first-grade classrooms. *Child Development*, 70, 756–767.
- Prinstein, M., Boergers, J., & Vernberg, E. (2001). Overt and relational aggression in adolescents: Social-psychological adjustment of aggressors and victims. *Journal of Clinical Child Psychology*, 30, 479–491.
- Rana, M., & Malhotra, D. (2008). Personality correlates of female aggression. *Studia Psychologica*, 50(4), 395–406.
- Saklofske, D., Caravan, G., & Schwartz, C. (2000). Concurrent validity of the Wechsler Abbreviated Scale of Intelligence (WASI) with a sample of Canadian children. *Canadian Journal of School Psychology*, 16, 87–94.
- Schwartz, D. (2000). Subtypes of victims and aggressors in children's peer groups. *Journal of Abnormal Child Psychology*, 28, 181–192.
- Schwartz, D., Farver, J., Chang, L., & Lee-Shin, Y. (2002). Victimization in South Korean children's peer groups. *Journal of Abnormal Child Psychology*, 30, 113–125.
- Schwartz, D., Gorman, A., Nakamoto, J., & McKay, T. (2006). Popularity, social acceptance, and aggression in adolescent peer groups: Links with academic performance and school attendance. *Developmental Psychology*, 42, 1116–1127.
- Simmons, R. (2002). *Odd girl out: The hidden culture of aggression in girls*. New York: Harcourt.
- Stipek, D., & Miles, S. (2008). Effects of aggression on achievement: Does conflict with the teacher make it worse? *Child Development*, 79, 1721–1735.
- Sutton, J., Smith, P., & Swettenham, J. (1999). Social cognition and bullying: Social inadequacy or skilled manipulation? *British Journal of Developmental Psychology*, 17, 435–450.
- Taylor, T., Davis-Kean, P., & Malanchuk, O. (2007). Self-esteem, academic self-concept, and aggression at school. *Aggressive Behavior*, 33, 130–136.
- Tomada, G., & Schneider, B. (1997). Relational aggression, gender, and peer acceptance: Invariance among informants. *Developmental Psychology*, 33, 601–609.
- Tremblay, R., Masse, B., Perron, D., Leblanc, M., Schwartzman, A., & Ledingham, J. (1992). Early disruptive behavior, poor school achievement, delinquent behavior, and delinquent personality: Longitudinal analyses. *Journal of Consulting and Clinical Psychology*, 60, 64–72.
- Underwood, M. (2003). *Social aggression among girls*. New York: The Guilford Press.
- Vaillancourt, T., Brendgen, M., Boivin, M., & Tremblay, R. (2003). A longitudinal confirmatory factor analysis of indirect and physical aggression: Evidence of two factors over time? *Child Development*, 74, 1628–1638.
- Vandell, D., & Pierce, K. (1998). Measures used in the study of after-school care: Psychometric properties and validity information. Unpublished manuscript, University of Wisconsin-Madison.
- Wechsler, D. (1999). *Wechsler Abbreviated Scale of Intelligence (WASI)*. London: The Psychological Corporation.
- Werner, R., Cassidy, K., & Juliano, M. (2006). The role of social-cognitive abilities in preschoolers' aggressive behavior. *British Journal of Developmental Psychology*, 24, 775–799.
- Wiseman, R. (2002). *Queen bees and wannabes: Helping your daughter survive cliques, gossip, boyfriends, and other realities of adolescence*. New York: Crown.
- Wong, W., & Cornell, D. (1999). PIQ > VIQ discrepancy as a correlate of social problem solving and aggression in delinquent adolescent males. *Journal of Psychoeducational Assessment*, 17(2), 104–112.
- Woods, S., & Wolke, D. (2004). Direct and relational bullying among primary school children and academic achievement. *Journal of School Psychology*, 42, 135–155.
- Young, E., Boye, A., & Nelson, D. (2006). Relational aggression: Understanding, identifying, and responding in schools. *Psychology in the Schools*, 43, 297–312.