Moral Reasoning and Aggressive Behavior: Concurrent and Longitudinal Relations

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The purposes of this study were to determine whether two forms of moral reasoning commonly found in early elementary school, self-oriented and psychological needs-oriented, are related to both current and future aggression. A total of 132 students participated in a study that began when they were in first or second grade and concluded two years later. Concurrent and longitudinal relations were found for overt aggression, and for both reactive and proactive functions of aggression. Psychological needs-oriented reasoning in early elementary school predicted aggression in later elementary school. Moral reasoning did not moderate the stability of aggression over time, however. Results have implications for school discipline practices and violence prevention and intervention programs.

KEYWORDS moral reasoning, proactive aggression, reactive aggression, school discipline, violence prevention

It is well established that moral reasoning is an important factor in aggression and school violence. Ample research shows that the moral reasoning of aggressive and antisocial children and adolescents tends to be self-oriented, focused on the acquisition of external rewards, the avoidance of punishment, and the application of retribution or revenge; in contrast, the moral reasoning of children and adolescents with little or no aggression and antisocial behavior focuses more on the needs of others, empathy, caring,
Longitudinal Relation Between Moral Reasoning and Aggression

Although many studies have established a concurrent relation between moral reasoning and aggression, research on the longitudinal relation between the two variables is scarce. We know of only one such study. Carlo, Mestre, Samper, Tur, and Armenta (2010) recently examined moral reasoning as a longitudinal predictor of self-reported prosocial behavior and aggression (physical and verbal) among a sample of early adolescent males in Spain. Results indicated that self-oriented moral reasoning was related positively to aggression and negatively to prosocial behavior, both concurrently and over time (with $r$s in the mid to upper .20s). Although they did not examine moral reasoning per se, several additional longitudinal studies of aggression support Carlo et al.’s finding that self-oriented moral reasoning serves as a risk factor in aggression. They also suggest that other-oriented moral reasoning serves as a protective factor. Egan, Monson, and Perry (1998) found that support for aggression (e.g., expecting tangible rewards; placing high value on the rewards obtained from aggression and low value on the suffering experienced by victims) was related to increases in aggression over the course of the school year. Similarly, Hastings, Zahn-Waxler, Robinson, Usher, and Bridges (2000) found that the presence of externalizing problems was less stable among elementary school children who had exhibited high concern for others as preschoolers than among those who had exhibited little concern. Finally, in a sample of preadolescents, Barry, Bodin, Cornell, Dane, and Frick (2003) demonstrated that the presence of a “callous/unemotional” style, which included an absence of empathy toward others and lack of guilt, was associated one year later with high levels of proactive aggression and delinquency, even after controlling for initial levels of conduct problems.

In the current study, we examined if moral reasoning in early elementary school predicts future aggression (2 years later) and moderates changes in aggression over time. In examining the relations between moral reasoning and aggression we studied children in early elementary school, which is a time in development in which moral reasoning tends to become less self-oriented and more other-oriented and empathy-based, shifting in focus from gaining rewards and avoiding punishment to an increased understanding and appreciation of the perspectives and needs of others (Eisenberg, Fabes, & Spinrad, 2006). As found in Carlo et al.’s (2010) longitudinal study and in multiple cross-sectional previous studies that have examined relations between moral reasoning and aggression (Palmer, 2005; Stams et al., 2006), we predicted that moral reasoning would be related to overt aggression.
Unlike in previous studies, however, we also examined the relation of moral reasoning, both concurrently and longitudinally, to two functions of aggression—proactive and reactive.

Proactive and Reactive Functions of Aggression

Based on both theory and empirical research, researchers generally agree that aggression can be conceptualized as existing in two basic forms: *overt* (or direct) and *relational* (or indirect) (for review see Card, Stucky, Sawalani, & Little, 2008). Overt aggression includes physically and verbally aggressive behaviors that harm others through damage, or the threat of damage, to their physical well-being. In contrast, relational aggression includes behaviors that harm others through damage, or the threat of damage, to their peer relationships (Crick et al., 1999). Although high correlations between overt and relational aggression have been reported in the literature, the distinction between the constructs is supported by evidence that they relate independently to various outcomes. In general, and relative to each other, overt aggression is related more to externalizing problems, whereas relational aggression is related more to internalizing problems (Card et al., 2008).

Most researchers also recognize that two functions of aggression, reactive and proactive, exist within the overt and relational forms of aggression (Card & Little, 2006; Crick & Dodge, 1996; Little, Jones, Henrich, & Hawley, 2003). The construct of *reactive aggression* is based upon the hypothesis that aggression occurs in response to frustration or to the perceived thwarting of one’s goals (Berkowitz, 1989; Dollard, Doob, Miller, Mowrer, & Sears, 1939). Reactive aggression refers to “hot-blooded” behavior that is frequently stimulated by anger, motivated by the goals of defense or revenge, and expressed in the form of retaliation (Dodge, Lochman, Harnish, Bates, & Pettit, 1997). Individuals tend to engage in reactive aggression impulsively and in response to provocation, without reflecting upon the consequences of their behavior or otherwise engaging in much moral reflection about their behavior. In contrast, *proactive aggression* refers to calculated, “cold-blooded” (Dodge et al., 1997) behavior that occurs in anticipation of positive outcomes, such as control or dominance over others, the acquisition of desired objects, or gaining respect and acceptance from peers (Arsenio, Adam, & Gold, 2009; Crick & Dodge, 1996; Dodge et al., 1997; Smithmyer, Hubbard, & Simons, 2000). Proactive aggression tends to be motivated by the goals of intimidation or dominance and may take the form of control over either people (i.e., bullying) or objects (i.e., instrumental aggression). Thus, proactive aggression may be best epitomized by the quote, “it’s easy, it works, and it makes me feel good” (Arsenio & Lemerise, 2001, p. 64). Consistent with research showing overt and relational aggression to be highly correlated (Card et al., 2008), research has found that children’s
moral reasoning relates similarly to overt and relational forms of aggression (Murray-Close, Crick, & Galotti, 2006). However, the relation of moral reasoning to reactive and proactive functions of aggression is much less clear, having been examined in very few studies.

As noted previously, an instrumental, self-oriented perspective rather than a concern about others characterizes proactive aggression. As such, we predicted that proactive moral reasoning is associated positively with moral reasoning that is self-oriented, and negatively with moral reasoning that focuses on the needs of others. In contrast, because reactive aggression is more impulsive in nature and linked more to frustration and anger than to moral reflection, we predicted that reactive aggression and moral reasoning are unrelated. The scant research on the relation of moral reasoning to proactive and reactive aggression supports these hypotheses. That is, in a recent study of mostly African-American and Latino adolescents, Arsenio et al. (2009) found that proactive aggressive tendencies were associated significantly and positively with self-oriented moral reasoning, particularly with perceptions of gain resulting from aggression (as opposed to concerns about others and issues of fairness) and with greater anticipations of feeling good or happy following either provoked or unprovoked aggression. In contrast, reactive aggressive tendencies were associated significantly and negatively with expected anger in victims.

**Purposes of the Study**

In sum, the purposes of the present study were twofold. First, we sought to replicate previous studies showing moral reasoning to be related to overt aggression. However, unlike in previous studies we examined the relation of moral reasoning to overt aggression over time. That is, we examined if moral reasoning predicts future overt aggression, as well as whether moral reasoning moderates changes in overt aggression. Second, we sought to extend previous research on moral reasoning and aggression by examining the concurrent and longitudinal relation of moral reasoning not only to overt aggression, but also to the proactive and reactive functions of aggression. As discussed previously, we hypothesized that self-oriented moral reasoning would be related positively and psychological needs-oriented moral reasoning negatively, to proactive aggression, but that neither type of moral reasoning would be related to reactive aggression. Longitudinally, we hypothesized that self-oriented moral reasoning would serve as a risk factor for the development of overt and proactive aggression, whereas psychological needs-oriented moral reasoning would serve as a protective factor.

In examining the relations between moral reasoning and aggression, we also predicted gender differences in moral reasoning and in overt, reactive, and proactive aggression. Consistent with previous research, we
predicted that compared to girls, boys would verbalize more self-oriented and less psychological needs-oriented moral reasoning (Eisenberg et al., 2006). Likewise, consistent with research on gender differences in aggression (Card et al., 2008), we predicted that boys would exhibit greater aggression. Although we explored gender differences in the relations between moral reasoning and aggression, we made no hypotheses about such gender differences. Not only did we have no theoretical reason to do so, but there is little research showing gender-related differences in social-cognitive factors predicting aggression (Dodge, Coie, & Lynam, 2006). Finally, in examining relations between moral reasoning and aggression we controlled statistically for socioeconomic status (SES). This was done because research has shown that SES is related negatively with self-oriented moral reasoning and positively with more mature forms of moral reasoning (Bear & Rys, 1994; Carlo et al., 2010), and also is related negatively with aggression (Dodge & Coie, 2006).

METHOD

Participants

Data were first collected while students were in the fall of first or second grade (T1) and from the same students about 2 years later in the winter and spring (T2). A total of 33 classrooms from five schools in the mid-Atlantic region of the United States participated. Two primary schools (Grades K-4) participated at T1; another primary school (Grades K-4), an intermediate school (Grades 5–6), and a charter school (Grades K-8) participated only at T2. At T1, students were drawn from 16 classrooms (5 first grade and 11 second grade). Parental permission was obtained for 216 of these 324 students (67%). At T2, parental permission was obtained for 65% of the students who participated at T1 (n = 132; 14% had moved out of the school district; parental permission was not obtained for 21%). At T1, 85% of the student participants were Caucasian, 13% were African-American, and 2% were Hispanic. The majority (68%) of students were in Grade 2, and the mean age was 7.4 years. At T2, 89% were Caucasian, 10% were African-American, 1% were Hispanic, and the majority (58%) were in Grade 5. The mean age was 10.7 years. A series of paired t-tests revealed no significant differences in T1 variables between students who did and did not participate at T2.

Measures

MORAL REASONING

Students’ moral reasoning was assessed through individual interviews with trained undergraduates. The interview included six questions in which students were asked why they should not engage in specific acts of overt aggression (i.e., hitting, stealing, starting fights, breaking in line, teasing,
and saying mean things about peers). After the initial question for each item was asked (e.g., “why shouldn’t you hit others?”), each student was asked a follow-up question (e.g., “why else shouldn’t you hit others?”) in order to solicit responses that might not come to mind initially.

Criteria for the qualitative coding of responses were adapted from procedures used by Colby and Kohlberg (1987), Eisenberg Carlo, Murphy, and Van Court (1995), and Gibbs, Basinger, and Fuller (1992; for details, see Manning & Bear, 2002). Three coding categories were used for the present study: imminent, probable, and psychological needs-oriented reasoning. The imminent and probable categories represented hedonistic, or self-oriented, moral reasoning, in which individuals focused for the effects of their actions on themselves. Imminent reasoning reflected concern for automatic and inevitable results (e.g., “I will get suspended”), whereas probable reasoning reflected concern for possible but not inevitable results (e.g., “I might get suspended”). The psychological needs-oriented reasoning category reflected concern for psychological effects of one’s actions on others (e.g., “you would hurt her feelings”). Two additional categories were coded but not used in the analyses. Physical needs-oriented reasoning reflected concern for physical effects of one’s actions on others (e.g., “you might break his nose”). To limit the number of variables in the study, and because this response category was unrelated to behavior in a previous study by the authors (Manning & Bear, 2002), we deleted this category. Likewise, a higher-order reasoning category had also been developed, which reflected concern for social approval or consideration of a third person’s perspective (e.g., “the teacher will think you’re nice”). Because percentage agreement for this category was only 60%, it was not used in this study. In scoring moral reasoning responses that fell within the above categories we followed procedures based upon previous studies of children’s and adolescents’ moral reasoning (e.g., Eisenberg et al., 1995; Miller, Eisenberg, Fabes, & Shell, 1996; Eisenberg, Miller, Shell, McNalley, & Shea, 1991). Those studies strongly supported the reliability and validity of the categories and scores. For each question, scores ranging from 0 to 2 were assigned to each of the three categories based upon the extent to which students verbalized the respective form of reasoning (0 = no response in that category, 1 = some but not all responses in that category, 2 = all responses in that category). Scores were summed across the six overt aggression items, yielding a total score for each category that ranged from 0 to 12. Although the categories were independent of each other (e.g., students could verbalize a concern for both probable consequences and psychological needs), the scores assigned to each category were not (i.e., if students used more than one category in response to the same question, they automatically received a score of 1 for each). The first author coded all interview responses. To determine interrater reliability, the second author coded a randomly selected sample of 25 interviews. Interrater agreement within categories was 88% for the imminent category, 89% for the probable category,
and 92% for the psychological needs-oriented category. The overall kappa coefficient was .94. All discrepancies between authors were discussed and resolved.

In an earlier study, the two forms of self-oriented reasoning, imminent and probable, were found to be more common among aggressive than nonaggressive children, but gender differences were found (Manning & Bear, 2002). Imminent reasoning was more common among aggressive than nonaggressive boys, and probable reasoning was more common among aggressive than nonaggressive girls. Given those findings, that the distinction between imminent and probable reasoning has theoretical basis in Kohlberg’s (1984) model (i.e., imminent reasoning is characteristic of Stage 1 and probable reasoning is characteristic of Stage 2), and that important differences between the two subcategories could be obscured by collapsing them into an overall self-oriented category, imminent and probable reasoning were examined separately in the present study.

**OVERT AGGRESSION**

The externalizing problems subscale of the Social Skills Rating System (SSRS; Gresham & Elliot, 1990), consisting of six verbal or physical acts of aggression, was used as a teacher-rated measure of overt aggression. As noted by Tremblay (2000), a limitation of many instruments that purport to measure aggression is that they “contain a mix of behaviors that range from physical aggression to attention seeking and disobedience” (p. 130). An advantage of the SSRS externalizing problems subscale is its omission of items that assess hyperactive and disruptive behaviors (i.e., nonaggressive behaviors are less likely to be related to moral reasoning). The psychometric properties of the SSRS are well supported (Furlong & Karno, 1995). An alpha of .89 was obtained at T1.

**Collection of Data From Students at T2**

**MORAL REASONING**

The six questions about overt aggression at T1 were asked again at T2 with six new questions added that were specific to relational aggression: excluding others, saying mean things to others, spreading rumors or talking about children behind their backs, telling children not to play with other children, telling children that you won’t be friends with them unless they do what you say, and getting even with certain children by telling others not to be friends with them. These items were taken directly from the literature on relational aggression (Crick et al., 1999). To minimize the possibility of a social desirability bias, the wording of the items was changed so that students were asked why children should not engage in particular behaviors. Instead of being asked, “Why shouldn’t you tease other kids?”—the format
used at T1—students were asked, “Why shouldn’t kids tease other kids?” This slight change was intended to help prevent the interview from feeling like an inquisition.

The same scoring procedures used at T1 were used at T2, with responses to 12 instead of 6 items scored. Scores were summed across the 6 overt and 6 relational aggression items, yielding a total score for each category of reasoning that ranged from 0 to 12. Interrater reliability was calculated on the basis of 30 randomly selected interviews. Cohen’s kappa was .80 and the percentage agreements were 75% for imminent reasoning, 85% for probable reasoning, and 83% for psychological needs-oriented reasoning. All discrepancies between authors were discussed and resolved.

**PEER NOMINATIONS: PROACTIVE AND REACTIVE FUNCTIONS OF AGGRESSION—OVERT AND RELATIONAL FORMS**

Peer nomination items were developed specifically for the present study, based on theory and research on reactive and proactive aggression (e.g., Hubbard, Morrow, Romano, & McAuliffe, 2010). Students were presented with class rosters, which included all students in the class, and told to circle the names of students who fit the following descriptions: hit other kids just to be mean, hit other kids when those kids do something that they don’t like, leave other kids out of a game just to be mean, and leave other kids out of a game when those kids do something that they don’t like. Following the recommendations of Terry (2000), students were asked to nominate an unlimited rather than limited number of classmates. Terry (1999) has demonstrated that the use of unlimited nominations results in valid and reliable sociometric data even when as few as 40% of children in a classroom participate in the assessment (Terry, 1999). The number of nominations each student received for the two proactive aggression items and the two reactive aggression items were standardized within gender and within classrooms. As such, each peer nomination score represents the relative position of an individual score in the distribution of scores in the comparison group (i.e., boys in the child’s class and girls in the child’s class).

**OVERT AGGRESSION**

Teachers completed the same measure of overt aggression that previous teachers completed at T1. An alpha of .90 was obtained at T2.

**PROACTIVE AND REACTIVE AGGRESSION**

Given the absence of adequate teacher ratings of the functions of aggression at the time of this study, a combination of measures was used. Ten items measuring overt forms of proactive aggression were taken from Brown,
Atkins, Osborne, and Milnamow’s (1996) scale. Five items assessing overt forms of reactive aggression were developed by the authors based on related research (e.g., Hubbard et al., 2010) and in consultation with a prominent researcher in this area of study. Next, all relational aggression items from McNeilly-Choque, Hart, Robinson, Nelson, and Olsen’s (1996) scale, which assessed both proactive and reactive functions, were used, along with three items assessing relational forms of reactive aggression from Crick’s (1996) teacher rating scale (to supplement the four on the McNeill-Choque et al. scale).

Teachers rated all items on a 3-point scale (never, sometimes, and often). Scores for proactive and reactive aggression were obtained by combining the overt and relational items from the two scales. Nineteen items measured the proactive function of aggression and 12 items measured the reactive functions. Internal consistency of the items was .89 for proactive aggression and .80 for reactive aggression. All teacher ratings were completed in the fall, after at least six weeks of school had passed.

**SOCIOECONOMIC STATUS**

In the absence of permission by the school district to use a standardized measure of SES, an estimate of SES was obtained at T2 by having each teacher rate the student’s SES (as in Bear & Rys, 1994) as 1 (low SES), 2 (middle SES), or 3 (high SES). Teachers rated 25% of the students as low, 63.6% as middle, and 11.4% as high. These results were largely consistent with the percentage of students (i.e., 30%) in each of the participating schools qualifying to receive free or reduced-price meals, as reported by the state’s department of education.

**RESULTS**

**Preliminary Analyses**

The final sample consisted of 132 students (70 boys and 62 girls). At T2, teachers rated the socioeconomic status of 25% of students ($n = 33$) as low, 64% ($n = 84$) as average, and 11% ($n = 15$) as high. A total of 429 students provided peer nominations of aggression. This number differs from the 132 mentioned previously, because at T2 parental permission to participate in the peer nomination measure was solicited from all students in the classes, not just from those students who participated at T1. Both the mean and median classroom participation rate was 59%, and ranged from 31% to 77%. The majority of classes (94%) exceeded the 40% participation rate recommended by Terry (1999), with only two classrooms falling below this standard (31% and 39%). The results reported next did not change significantly when peer nominations from those two classrooms (consisting
of six boys and seven girls) were deleted from the analyses; thus, these two classrooms were included.

Examination of frequency histograms indicated that the assumption of normality was violated for T1 imminent reasoning, T2 imminent reasoning, T1 teacher-reported overt aggression, T2 teacher-reported overt aggression, and teacher-reported proactive aggression. Square root transformations on those variables improved the shapes of their distributions. Examination of residuals scatterplots, using transformed variables as appropriate, indicated that the assumptions of both linearity and homoscedasticity were met. Examination of the Durbin-Watson statistics revealed no autocorrelation, and examination of the variance inflation factors, condition indices, and variance decomposition proportions (VDPs) indicated the absence of collinearity.

Preliminary correlational analyses were conducted to determine whether SES was related to any of the independent or dependent variables; when significant, their effects were controlled in subsequent analyses. SES was associated with low levels of overt aggression as rated by teachers ($r = -0.15$, $p < 0.05$ at T1 and $r = -0.20$, $p < 0.05$ at T2) and with low levels of reactive aggression as rated by peers ($r = -0.18$, $p < 0.05$). As a result, the effects of SES were controlled in subsequent regressions on these variables. However, teacher and peer reports of both proactive and reactive aggression were not correlated and thus were examined separately in subsequent analyses.

Overview of Subsequent Analyses

We first examined mean differences between girls and boys in moral reasoning and aggression. Second, we examined concurrent relations among variables using both zero-order correlations and regression analyses. Regression analyses were performed to determine how much variance in aggression could be explained by each type of moral reasoning at both T1 and T2, after controlling for the effects of SES. Regression analyses also examined for the effect of gender, and its interaction with moral reasoning, on aggression. Typically, imminent reasoning and probable reasoning were examined separately. At T2, however, because imminent reasoning and probable reasoning were similarly correlated with teacher-rated overt aggression ($r = 0.35$, $p < 0.001$, both before and after controlling for SES), these variables were collapsed into a single self-oriented moral reasoning variable for the T2 regression analyses. Block entry forms of regression were used whereby SES was entered into the first block (as appropriate), moral reasoning into the second block, gender into the third block, and the interaction between gender and moral reasoning into the fourth block. Third, we employed regression analyses similar to those described above to determine longitudinal relations, whether early moral reasoning predicted later aggressive behavior and whether results varied by gender. Given the
nonindependence of the moral reasoning categories, regressions were performed separately for each type of moral reasoning. Consistent with analyses by others (e.g., Arsenio et al., 2009), proactive aggression was controlled when reactive aggression was examined (and vice versa) to separate the variance shared by the two functions of aggression.

To reduce the likelihood of both Type I and Type II errors in all analyses, two different levels of significance were adopted, depending upon the specific question that was asked (Stevens, 2002). Questions about mean differences in aggression and moral reasoning as a function of gender and questions about the relationship of moral reasoning to aggression were tested for significance at .05 (using one-tailed tests) given that the specific direction of each relationship was predicted based on theory and previous research. Questions about whether these effects varied by gender were tested at a more conservative level of significance ($\alpha = .01$, using two-tailed tests) given that no specific predictions were made about gender. Finally, to determine whether moral reasoning moderated the stability of aggression over time we used block entry forms of regression analysis. Given the focus on the stability of aggression, the measure of overt aggression (i.e., the externalizing problems subscale of the SSRS) was the only measure of aggression that could be examined (i.e., this was the only measure of aggression administered at both T1 and T2). Variables were regressed on T2 overt aggression in the following order: T1 overt aggression was entered into the first block, T1 moral reasoning into the second block, gender into the third block, and all possible 2- and 3-way interactions into the next several blocks (i.e., the interaction between T1 overt aggression and T1 moral reasoning was entered into the fourth block, the interaction between T1 overt aggression and gender into the fifth block, the interaction between T1 moral reasoning and gender into the sixth block, and the 3-way interaction among T1 moral reasoning, T1 overt aggression, and gender into the seventh block). If found, a significant interaction in either the fourth or the seventh block would suggest the moderating effect of moral reasoning on aggression (either across genders or for one gender in particular). This analysis was conducted three separate times: for psychological needs-oriented reasoning, imminent reasoning, and probable reasoning as the predictor variables.

Mean Differences

Means and standard deviations of the moral reasoning and aggression variables assessed at both T1 and T2 are displayed in Table 1. As predicted, boys demonstrated more teacher-reported overt aggression than girls at both T1, $F(1, 130) = 7.98, p < .01, ES = .50$, and at T2, $F(1, 130) = 2.81, p = .05, ES = .30$. There were no significant gender differences in teacher-reported proactive aggression, $F(1, 130) = 2.22, p = .14, ES = .26$, or reactive aggression, $F(1, 130) = 1.90, p = .17, ES = .24$. As predicted, girls verbalized more
<table>
<thead>
<tr>
<th>Variable</th>
<th>T1</th>
<th>T2</th>
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<tr>
<td></td>
<td>Boys</td>
<td>Girls</td>
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<tr>
<td>Imminent reasoning</td>
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<td>Probable reasoning</td>
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<td>Reactive aggression: Teacher rated</td>
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<td>Proactive aggression: Peer nominated</td>
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<td>Reactive aggression: Peer nominated</td>
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TABLE 1 Means and Standard Deviations of Variables Assessed at Both T1 and T2
psychological needs-oriented reasoning than boys, $F(1, 130) = 5.50, p < .05, ES = .39$.

Concurrent Relations

Correlations among Variables

As predicted, moral reasoning was related to teacher-reported overt aggression. At T1, teacher-reported overt aggression correlated negatively with psychological needs-oriented reasoning ($r = -.27, p < .01$) and positively with one of the two forms of self-oriented moral reasoning, namely imminent reasoning ($r = .26, p < .01$). At T2, teacher-reported overt aggression correlated negatively with psychological needs-oriented reasoning ($r = -.21, p < .001$) and positively with both forms of self-oriented moral reasoning, imminent reasoning ($r = .28, p < .001$) and probable reasoning ($r = .28, p < .001$). Moral reasoning was related not only to the general measure of overt aggression but also to one of the more specific functions of aggression, namely reactive aggression. Psychological needs-oriented reasoning at T2 was negatively related to reactive aggression as assessed by both teachers and peers ($r = -.18, p < .05$ and $r = -.20, p < .05$, respectively), whereas probable reasoning at T2 was positively related to reactive aggression as rated only by peers ($r = .20, p < .05$). Moral reasoning was not significantly related to proactive aggression.

Associations among Variables after Controlling for SES

As shown in Table 2 at T1 regression analyses demonstrated that both imminent reasoning and psychological needs-oriented reasoning continued to be associated with teacher-reported overt aggression after accounting for variance explained by SES (6% and 7%, respectively). Consistent with the gender differences reported earlier, gender was independently associated with teacher-reported overt aggression. The interactions between gender and moral reasoning were not significant, $F_{inc}(1, 127) = 5.92, p = .02$ for imminent reasoning and $F_{inc}(1, 127) = 2.54, p = .11$ for psychological needs-oriented reasoning. At T2, both self-oriented reasoning and psychological needs-oriented reasoning explained significant amounts of variance beyond that explained by SES (i.e., 15% and 8%, respectively). Neither the effects of gender nor the interaction between gender and moral reasoning were significant.

As shown in Table 3, at T2 both probable reasoning and psychological needs-oriented reasoning explained significant amounts of variance in peer-nominated reactive aggression (4% each) beyond that explained by SES. Psychological needs-oriented reasoning explained a similar, and significant, amount of variance (3%) in teacher-reported reactive aggression. Neither
### TABLE 2 Prediction of Teacher-Reported Overt Aggression From Moral Reasoning

<table>
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<tr>
<th>Block</th>
<th>Predictor</th>
<th>β</th>
<th>R</th>
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<td>.23**</td>
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<td>.09</td>
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<td>SES</td>
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<td>.39***</td>
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<td></td>
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<td>.19</td>
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</tr>
<tr>
<td></td>
<td>T2 Psychological needs-oriented reasoning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Standardized regression coefficients are provided. The table displays results of four different regression analyses.  
*a* df = 1, 130.  
*b* df = 1, 129.  
*p < .05.  **p < .01.  ***p < .001.

### TABLE 3 Prediction of Reactive Aggression at T2 From Moral Reasoning at T2

<table>
<thead>
<tr>
<th>Block</th>
<th>Predictor</th>
<th>β</th>
<th>R</th>
<th>R²</th>
<th>FΔ</th>
<th>F</th>
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<tbody>
<tr>
<td></td>
<td>Peer-nominated reactive aggression</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1</td>
<td>SES</td>
<td>−.18*</td>
<td>.18</td>
<td>.03</td>
<td>4.12*</td>
<td>4.12*a</td>
</tr>
<tr>
<td>2</td>
<td>SES</td>
<td>−.18*</td>
<td>.27</td>
<td>.07</td>
<td>6.07**</td>
<td>5.17**b</td>
</tr>
<tr>
<td></td>
<td>T2 Probable reasoning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>SES</td>
<td>−.18*</td>
<td>.27</td>
<td>.07</td>
<td>5.53*</td>
<td>4.90**b</td>
</tr>
<tr>
<td></td>
<td>T2 Psychological needs-oriented reasoning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Teacher-reported reactive aggression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>T2 Psychological needs-oriented reasoning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Standardized regression coefficients are provided. The table displays results of three different regression analyses. SES was not included in the regressions on teacher-reported reactive aggression given its nonsignificant relation to this variable.  
*a* df = 1, 130.  
*b* df = 1, 129.  
*p < .05.  **p < .01.  ***p < .001.
gender nor the interaction between gender and moral reasoning explained any additional variance in reactive aggression.

Relation of Early Moral Reasoning to Later Aggression

Psychological needs-oriented reasoning at T1 was negatively related to teacher-reported overt aggression at T2 ($r = -0.21, p < .01$). Psychological needs-oriented reasoning at T1 was also negatively related to teacher-reported proactive aggression at T2 ($r = -0.15, p < .05$). Imminent reasoning at T1 was positively related to peer-nominated reactive aggression at T2 ($r = 0.16, p < .05$). Given these correlations, regressions were performed first on the general measure of aggression (i.e., teacher-reported overt aggression) and then on the two specific functions of aggression (i.e., peer-nominated reactive aggression and teacher-reported proactive aggression).

As shown in Table 4, psychological needs-oriented reasoning at T1 explained a significant amount of variance (i.e., 5%) in teacher-reported overt aggression at T2. Gender had a main effect on teacher-reported overt aggression at T2, but did not interact with psychological needs-oriented reasoning. As shown in Table 5, imminent reasoning at T1 explained 2% of the variance, beyond SES, in peer-nominated reactive aggression at T2. The influence of imminent reasoning on peer-nominated reactive aggression became nonsignificant after controlling for peer-nominated proactive aggression and SES. Neither gender nor the interaction between gender and moral reasoning explained any additional variance in peer-nominated reactive aggression. Because the distribution for teacher-reported

<table>
<thead>
<tr>
<th>Block</th>
<th>Predictor</th>
<th>$\beta$</th>
<th>$R$</th>
<th>$R^2$</th>
<th>$F_{\Delta}$</th>
<th>$F$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>-0.20</td>
<td>0.20</td>
<td>0.04</td>
<td>5.18*</td>
<td>5.18**</td>
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<td>2</td>
<td>SES</td>
<td>-0.17</td>
<td>0.30</td>
<td>0.09</td>
<td>7.32**</td>
<td>6.37**</td>
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<td></td>
<td>T1 Psychological needs-oriented reasoning</td>
<td>-0.23**</td>
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<td></td>
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</tr>
<tr>
<td>3</td>
<td>SES</td>
<td>-0.18</td>
<td>0.33</td>
<td>0.11</td>
<td>2.98*</td>
<td>5.30**</td>
</tr>
<tr>
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<td>T1 Psychological needs-oriented reasoning</td>
<td>-0.21**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>-0.14</td>
<td>0.12</td>
<td></td>
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</tr>
<tr>
<td>4</td>
<td>SES</td>
<td>-0.18</td>
<td>0.12</td>
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</tr>
<tr>
<td></td>
<td>T1 Psychological needs-oriented reasoning</td>
<td>-0.14</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>-0.12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>T1 Psychological needs-oriented reasoning $\times$ Gender</td>
<td>-0.12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Standardized regression coefficients are provided.

*a* $df = 1, 130$. *b* $df = 1, 129$. *c* $df = 1, 128$.

*p < .05. **p < .01. ***p < .001.*
TABLE 5 Prediction of Peer-Nominated Reactive Aggression at T2 From Moral Reasoning at T1

<table>
<thead>
<tr>
<th>Block</th>
<th>Predictor</th>
<th>β</th>
<th>R</th>
<th>$R^2$</th>
<th>$F_{\Delta}$</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before controlling for peer-nominated proactive aggression</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>SES</td>
<td>-.18*</td>
<td>.18</td>
<td>.03</td>
<td>4.12*</td>
<td>4.12**a</td>
</tr>
<tr>
<td>2</td>
<td>SES, T1 Imminent reasoning</td>
<td>-.16*</td>
<td>.14</td>
<td>.05</td>
<td>2.80*</td>
<td>3.49**b</td>
</tr>
<tr>
<td></td>
<td>After controlling for peer-nominated proactive aggression</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Peer-nominated proactive aggression</td>
<td>.75***</td>
<td>.75</td>
<td>.56</td>
<td>166.44***</td>
<td>166.44***a</td>
</tr>
<tr>
<td>2</td>
<td>Peer-nominated proactive aggression, SES</td>
<td>.74***</td>
<td>.75</td>
<td>.57</td>
<td>1.55</td>
<td>84.34***b</td>
</tr>
<tr>
<td>3</td>
<td>Peer-nominated proactive aggression, SES, T1 Imminent reasoning</td>
<td>.73***</td>
<td>.76</td>
<td>.58</td>
<td>2.58</td>
<td>57.78***c</td>
</tr>
</tbody>
</table>

Note. Standardized regression coefficients are provided. *df = 1, 130. **df = 1, 129. ***df = 1, 128. *p < .05. **p < .01. ***p < .001.

proactive aggression violated the assumption of normality, a square root transformation was performed for the regressions. The influence of psychological needs-oriented reasoning upon teacher-reported proactive aggression became nonsignificant when regressions were conducted on the transformed variable.

Moderating Role of Moral Reasoning on the Stability of Aggression

Overt aggression at T1 accounted for 16% of the variance in overt aggression at T2, $F(1, 130) = 24.30, p < .001$. After controlling for overt aggression at T1, psychological needs-oriented reasoning at T1 made a significant contribution to the prediction of overt aggression at T2, $F_{inc}(1, 129) = 3.34, p < .05$. No significant interaction was found between early teacher-reported overt aggression and any of the three types of moral reasoning at T1, suggesting that moral reasoning did not moderate the stability of aggression over time for either boys or girls. Although the influence of psychological needs-oriented reasoning upon aggression appeared to vary by gender, this effect was not significant at $p < .01$ (the required level of significance for this exploratory analysis), $F_{inc}(1, 125) = 3.52, p = .06$.

DISCUSSION

Relation of Moral Reasoning to Current and Future Aggression

Consistent with previous research (Palmer, 2005; Stam et al., 2006), the moral reasoning of students high in teacher-rated overt aggression tended
to be self-oriented, focusing on the consequences of their behavior to themselves, whereas the moral reasoning of students low in overt aggression focused much more the psychological impact of their behavior on others. The present study builds upon previous studies by demonstrating that high levels of psychological needs-oriented reasoning were associated with low levels of overt aggression not only at the same point in time but also 2 years later.

Results also build upon research by showing that moral reasoning is related not simply to the form of later aggression (i.e., overt) but also to its function. Consistent with the recent findings of Fanti, Frick, and Georgiou (2009), at one point or another (and depending on the measure of aggression) a caring perspective toward others, as seen in psychological needs-oriented reasoning, was related negatively to both reactive and proactive aggression. However, contrary to our predictions, effects were most consistent for reactive aggression. Reactive aggressors verbalized little concern for the effects of their actions on others (i.e., psychological needs-oriented reasoning) but significant concern for the effects of their actions on themselves (i.e., either imminent or probable reasoning).

It is interesting that although related to psychological needs-oriented reasoning, proactive aggression was not related to either of the two forms of self-oriented moral reasoning, imminent and probable (whereas reactive aggression was related to both forms). Given perceptions of proactive aggressors as cold, callous, self-serving individuals (Arsenio & Lemerise, 2001), self-oriented moral reasoning was expected to be highest among this group of individuals. The failure to find this may be a function of how self-oriented moral reasoning was measured. Because students were asked why they should not engage in aggressive behavior, the nature of the question may have pulled for negative consequences, most often punishment. Previous research has shown, however, that proactive aggressors expect aggression to result in positive consequences (Arsenio et al., 2009). Future research will need to determine whether proactive and reactive aggressors express levels of self-oriented moral reasoning that are equally high but qualitatively different.

Contrary to our predictions, moral reasoning was not shown to moderate the stability of teacher-reported overt aggression over time. Although it is unclear why a moderating effect was not found, it is likely that other factors not included in this study exerted a stronger moderating effect, and perhaps interactive effects with moral reasoning, that dwarfed the effects of moral reasoning on behavior. The effect sizes of the relations between moral reasoning and aggression in the present study were rather small, which may have restrained the evidence for a moderating effect for moral reasoning.

Also contrary to our predictions, gender differences were not found on all measures of aggression. As predicted, boys demonstrated more teacher-reported overt aggression than girls. However, no significant gender differences were found in teacher-reported proactive aggression and
reactive aggression. This finding of statistical nonsignificance is of great practical import, as it suggests no gender differences in the functions of aggression (proactive and reactive) when both forms (overt and relational) are taken into account.

Limitations

Several limitations of the study should be noted. First, although results suggest that early moral reasoning is related to later aggressive behavior, the use of regression techniques precludes an analysis of whether moral reasoning influences aggression, aggression influences moral reasoning, or each variable influences and is influenced by the other. It seems likely that moral reasoning and aggression share a bidirectional relationship, but more sophisticated designs or analytic techniques are necessary to confirm this hypothesis. Second, the analysis of the teacher ratings of aggression posed a significant limitation. Given variability among teachers in their awareness of and tolerance toward aggressive behavior, standardized teacher ratings of aggression within classrooms were desired. Given the small number of students rated by each teacher (i.e., each teacher rated between one and nine students, with 39% of teachers rating only one or two students), this was not feasible. Standardizing peer nominations within classrooms but not teacher ratings may help explain why no significant correlations between peer and teacher reports of proactive and reactive aggression were obtained. Third, the large amount of variability present in many of the variables was another significant limitation. In some cases (e.g., imminent reasoning, teacher-rated proactive aggression), the standard deviations were larger than the means themselves. The large amount of variability likely contributed to the significantly low power that plagued several analyses and may have obscured genuine relationships among the variables. It is unclear if the variability was attributed to the measurement instruments used, or a valid reflection of traits measured. Finally, results of the present study are limited by the fact that moral reasoning and aggressive behavior were assessed in response to different situations. That is, the specific situations presented on the moral reasoning instrument did not precisely match the situations on the aggression measures. A related limitation to the measure of moral reasoning was that it did not differentiate reactive and proactive aggression. In the present study, children were questioned about behaviors that were overtly or relationally aggressive but not specifically proactively or reactively aggressive.

Implications for Practice

Results of the present study have implications for the prevention, reduction, and treatment of aggression by informing the development and
implementation of school discipline procedures and violence prevention and intervention programs. For example, results here and elsewhere (e.g., Manning & Bear, 2002; Murray-Close et al., 2006) suggest that aggressive students are often well aware of the effects their wrongdoing will have on themselves. Such awareness, however, does not appear to deter them from misbehavior—a basic assumption of the zero tolerance approach to school violence (American Psychological Association Zero Tolerance Task Force, 2008). A more powerful deterrent may be recognition of the effects of their actions on others, particularly effects that are psychological in nature. Thus, results support the position that disciplinary policies and practices should not focus students’ attention and reasoning on avoiding punishment and receiving rewards, but should include an emphasis on the impact of one’s behavior on others (Bear, 2010; Hoffman, 2000; Osher, Bear, Sprague, & Doyle, 2010).

Results of the present study also have implications for the development and implementation of violence prevention and intervention programs. The present findings support researchers’ recommendations that programs may be more effective if they increase students’ reasoning about and feelings of empathy, guilt, and responsibility (Bear, 2010; Caffray & Schneider, 2000; Harvey, Fletcher, & French, 2001), as seen in such evidence-based programs as Second Step: A Violence Prevention Curriculum (Fitzgerald & Van Schoiack-Edstrom, 2006) and Promoting Alternative Thinking Strategies (PATHS; Bierman et al., 2010; Greenberg & Kusche, 2006).

REFERENCES


Hubbard, J. A., Morrow, M. T., Romano, L. J., & McAuliffe, M. D. (2010). The role of anger in children’s reactive versus proactive aggression: Review of findings,


