Peer Estimates of School-Aged Boys’ and Girls’ Aggression to Same- and Cross-Sex Targets

Alan Russell and Laurence Owens, Flinders University

Abstract

Research comparing boys’ and girls’ aggression has typically focused on the overall amount of aggression using a within-sex design. Less attention has been given to differences in children’s aggression according to the sex of the target. In the research reported here, boys’ and girls’ amount and style of aggression were compared for same- and cross-sex targets. A peer estimation procedure was used with children in Grades 2, 6, 9, and 11. Physical, verbal, and indirect aggression were studied. Although there were some differences according to Grade level, both the amount and style of aggression for boys and for girls differed as a function of the sex of target, with cross-sex aggression generally falling between the amount and style of boys-to-boys and girls-to-girls aggression. The results draw attention to the possible separate nature of the cross-sex context, and highlight the importance of taking into account the target of aggression when investigating differences in aggression between boys and girls.

Keywords: Peer estimates; aggression; same-sex; cross-sex

Until recently, aggression has been seen as a predominantly male phenomenon (Buss, 1961; Maccoby & Jacklin, 1974; Olweus, 1978). In fact, Buss (1961) believed that aggression among females was not an issue requiring study. Similarly, Olweus in his earlier work (1978) considered that bullying occurred so infrequently among female adolescents that he excluded them from his research. However, with a broadening of conceptualisations of aggression to include indirect as well as direct forms (Bjorkqvist, 1994; Bjorkqvist, Osterman, & Kaukiainen, 1992), has come evidence that both males and females can be aggressive, but that they tend to use different styles of aggression. For example, there is evidence that whereas boys use more overt forms such as physical aggression (e.g., hitting or pushing) and verbal aggression (e.g., name calling, yelling), girls tend to use more indirect forms of aggression (e.g., excluding from the group, spreading rumours) (Bjorkqvist, 1994; Bjorkqvist et al., 1992; Crick & Grotpeper, 1995; Rys & Bear, 1997).

Studies of boys’ and girls’ aggression usually have been conducted using a within-sex design (based on boys’ aggression to boys and girls’ aggression to girls), or have ignored the sex of the target (Campbell, Sapochnik, & Muncer, 1997; Crick &...
Grotpeter, 1995; Hops, Alpert, & Davis, 1997; Rys & Bear, 1997). Research investigating aggression to cross-sex targets is relatively limited. Gergen (1990) provides an example in a study which examined horseplay and aggression toward same and cross-sex targets in an undergraduate sample. Harris (1992) also used an undergraduate sample, in a study of the specific aggressive behaviors directed towards and received by males and females.

In contrast to the samples used by Gergen and Harris, children have been the focus of work by Archer, Pearson, and Westeman (1988) which involved 6 to 11 year-olds, and Crick, Bigbee and Howes (1996), who studied 9 to 12 year-olds. Archer et al. (1988) observed physical and verbal aggression in classroom interaction and found that boys used more physical aggression than girls did and girls used more verbal aggression than boys did. Their analyses of same- versus cross-sex aggression was conducted on only the total amount of aggression, with a finding that for both boys and girls the targets of aggression tended to be same- rather than cross-sex peers.

Rather than using observations, Crick et al. (1996) investigated children’s beliefs about how often different types of aggressive behavior occurred in the peer group. In the present research, a parallel method was used in the sense that the data were peer estimates of aggression. This means that the results relate more to perceptions of aggression than to actual aggression; perceptions might diverge somewhat from actual aggression. However, the peer estimation procedure has been used frequently in the study of children’s aggression (Eron, Huesmann, Lefkowitz & Walder, 1972; Huesmann, Lagerspetz & Eron, 1984; Huesmann & Eron, 1986; Coie & Dodge, 1983; Dodge, 1980; Lagerspetz, Bjorkqvist & Peltonen, 1988; Bjorkqvist et al., 1992; Bjorkqvist, Osterman, & Lagerspetz, 1994; Crick, 1995; Crick and Grotpeter, 1995). Bjorkqvist et al. (1992) stressed the advantages of using peer estimates in measuring indirect aggression. They proposed that due to the socially undesirable nature of indirect aggression such as spreading false rumours, self-ratings would not be accurate. They further argued that observational techniques would not measure indirect aggression well. Crick and Grotpeter (1995) agreed that indirect forms of aggression would be difficult for people outside the peer group (e.g., teachers or researchers) to observe because of the covert nature of such behaviors.

Crick et al. (1996) examined sex-of-target differences in reports on aggression, with differences suggested for both boys and girls. For instance, the reports indicated that girls’ aggression toward boys was more physical and less relational than girls’ aggression to girls, and that when boys were aggressive to girls, relational elements featured more than in boys’ aggression to boys. Further, Crick et al. (1996) found that whereas boys and girls held similar beliefs about the aggression of boys, they differed in beliefs about the aggression of girls. For example, boys viewed girls as more physically aggressive than girls viewed girls. Crick et al. (1996) also found that relational aggression was reported as more normative for 5th and 6th Graders than for 3rd Graders.

The present research, again using reports of aggression, examined differences in children’s aggression according to same- versus cross-sex targets, and in doing so builds on and extends that by Crick et al. (1996). The research outlined here extends that by Crick et al. (1996) partly through being undertaken in a different culture and through the use of a wider age range of children (from Grade 2 to Grade 11). Further, in contrast to Crick et al.’s open-ended questions, the present study employed a structured assessment procedure, covering physical, verbal and indirect
forms of aggression. This enabled the investigation of how frequently each type of aggressive behavior was used, rather than simply whether the child listed the behavior as occurring, the procedure used by Crick et al. The data are part of a larger project on children’s aggression, where previous reports have focused on within-sex aggression (Owens, 1996; Owens & MacMullin, 1995). In the present report, the within-sex data are included to enable comparisons with cross-sex aggression.

Four main predictions guided the present analyses. The first prediction was that in terms of total amount, both boys and girls would direct more aggression to boys than to girls, i.e. that generally more aggression is directed to boys than to girls. There is evidence that both males and females behave less aggressively toward females than toward males, although this pattern has not always been found (Eagly & Steffin, 1986; Frodi, Macaulay & Thome, 1977). The notion of chivalry, where males are expected to show reduced aggression towards females (Eagly & Crowley, 1986), could be a factor in less aggression to females than to males. The suggestion that males are more likely to be the targets of aggression than females is based largely on studies of physical, and verbal rather than indirect, aggression. In this sense, it could be argued that there is a stronger basis for a prediction of more aggression to males than to females when the form of aggression is direct than when it is indirect.

The second prediction relates to style of aggression. The idea of style of aggression as used here concerns the relative use of different forms of aggression, namely physical, verbal, and indirect. Even if there is no difference in the amount of aggression according to sex-of-target, there could be differences in the style of aggression in terms of the relative use of physical, verbal, and indirect forms. The prediction examined here was that for both boys and girls there will be no difference in the style of aggression directed to same- and cross-sex targets. This prediction is based on the notion that interpersonal styles developed within sex segregated relationships are carried over into cross-sex relationships (Maccoby, 1995). There is some evidence on the extent to which this carry-over might occur for behaviors other than aggression. For example, when boys and girls play together, boys continue to use their same style, and to some extent girls do as well, with little success in influencing boys (Gervai, Turner, & Hinde, 1994; Maccoby, 1988; Serbin, Sprafkin, Elman, & Doyle, 1984; Smith & Inder, 1993). If comparable patterns occur for aggressive styles, it would be expected that both boys and girls would show similar styles of aggression with same- and cross-sex targets.

The third prediction was that the expectation of no differences in style of aggression for same- and cross-sex targets would hold more for children in the early and middle childhood years than for adolescents. Given the strength of sex segregation preferences during early and middle childhood (Gottman, 1986; Leaper, 1994; Gray & Feldman, 1997; 1994; Maccoby, 1990, 1995: Thorne, 1993), it would be expected that children in this age period would display similar styles of aggression towards cross-sex targets as they do to same-sex targets. This is because most of their socialization experiences are within same-sex groups. However, with the increased emphasis on cross-sex peer relationships commencing from early adolescence (Dunphy, 1963; Maccoby, 1990), from this age both boys and girls might show a greater tendency to adapt their style of aggression according to the sex of target. If the latter holds, it would be predicted that the reports in the present research will show adolescent boys’ aggression to girls will be relatively more indirect than the aggression of younger boys towards girls. In addition, adolescent girls’ aggression to boys would
be expected to be relatively less indirect than the aggression of younger girls towards boys (i.e., younger girls more than older girls will carry-over their indirect style into encounters with boys).

The final prediction concerned differences according to sex-of-informant. In particular, following the results of Crick et al. (1996), it was expected that boy and girl informants would agree about boys’ amount and style of aggression, but not about girls’ aggression.

**Method**

**Participants**

The participants were 422 students from co-educational schools, two High Schools and four Primary Schools, in metropolitan Adelaide, South Australia. All schools were in predominantly lower to middle socio-economic status suburbs. Classes were randomly selected at each of the Grade levels of 2, 6, 9, and 11. The selection involved 4 classes out of 8 at Grades 2 and 6, and 4 classes out of 12 at Grades 9 and 11. There were 108 students at Grade 2 (55 boys and 53 girls), 111 students at Grade 6 (59 boys and 52 girls), 104 at Grade 9 (58 boys and 46 girls), and 99 at Grade 11 (48 boys and 51 girls). The mean age of students in Grade 2 was 7.9 years, in Grade 6 11.9 years, in Grade 9 14.7 years, and in Grade 11 it was 16.6 years.

**Measurement of aggression**

Aggression was measured using peer estimations of the extent to which different forms of aggression occurred among students within the given Grade level. Subjects completed a questionnaire that was adapted from the Direct and Indirect Aggression Scales (Bjorkqvist, Osterman, & Lagerspetz, 1994), with established reliability and validity (Bjorkqvist et al., 1992; Bjorkqvist et al., 1994). The Direct and Indirect Aggression Scales (DIAS) is a 24-question instrument which measures 3 types of aggression, direct *physical* (e.g., hit, kick, trip, shove, take things, push, pull), direct *verbal* (e.g., yell, insult, call names, tease), and *indirect* (e.g., shut out of group, become friends with others as revenge, ignore, gossip, tell bad or false stories). An examination of the factor structure in the present sample confirmed three factors that were consistent with the scales contained in the DIAS (Owens & MacMullin, 1995).

**Procedure**

The questionnaire was group-administered to the whole class towards the end of the school year by the second author. The end of the school year was selected to enable greater knowledge about the form and amount of aggression among students in the Grade. The definitions and instructions were discussed with the class, and then Grades 6, 9, and 11 students completed the questionnaire independently. For Grade 2, under the supervision of the second author, the class was divided into two groups and volunteer students from Grade 6 who had already completed the questionnaire assisted the Grade 2 students, by explaining the meaning of words and scribing answers if necessary.

In the instructions to participants on the questionnaire, aggression was defined as *behavior intended to harm or injure others*, and the examples given included physical,
verbal, and indirect forms. Subjects were told that the questionnaire was about aggression among students in their Grade (not just their class, but across all students of their Grade), and that their task was to estimate how often students used each form of aggression listed in the questionnaire. For each item, students were given a 5-point scale of 1 (never), 2 (seldom; about once per two months), 3 (sometimes; about every 2 to 3 weeks), 4 (quite often; about once or twice per week), and 5 (very often; almost every day). In addition, they had the option of responding ‘Don’t know’. Specifically, participants were asked, ‘How often do girls (boys) in your Grade level do each of these aggressive behaviors to other girls (boys)’ and to select a response on the 5-point scale. Subjects first completed the questionnaire with respect to their own sex with the target being their own sex (e.g., girls’ aggression to other girls), then aggression to the other sex (e.g., girls’ aggression to boys), and finally the aggression of the other sex to their own sex (e.g., boys’ aggression to girls). It can be seen that both boys and girls acted as informants on the cross-sex aggression of boys to girls and of girls to boys. Boys and girls acted as informants on same-sex aggression for their own sex, but not for the other sex. Participants thereby were acting as informants only on aggression with which they had direct experience (either as an initiator, or as a target).

Results

First, the absolute levels of same- and cross-sex aggression were compared. These results are directed to the prediction that both boys and girls will be more aggressive to boys than to girls. Second, the relative use of different forms of aggression was compared for same- and cross-sex aggression. The relative data address predictions relating to stylistic differences according to sex of target. The relevant descriptive data are presented in Tables 1 and 2, where the results for boys’ and girls’ aggression are given as a function of Grade level, type of aggression, informant (whether boys’ estimates or girls’ estimates), and target of aggression. The principal analyses were 2 (either sex-of-target, sex-of-actor, or sex-of-informant) by 4 (Grade level) MANOVAs, with follow-up ANOVAs for each type of aggression. The principal analyses were conducted on the separate results for boys’ aggression and for girls’ aggression. The alpha for the MANOVAs was set at .05, and to make a Bonferroni-type correction, the alpha was set at .01 for the follow-up ANOVAs. Significant ANOVAs with multiple levels were further examined using post-hoc procedures (Scheffe tests) with an alpha of .01.

Absolute levels of aggression

The descriptive data are given in Tables 1 and 2. It can be seen that the average ratings for each of the three types of aggression were low to moderate. The means show that the average rating for the items in each of the three types of aggression was between seldom and quite often for boys’ aggression to boys. In the case of boys’ aggression to girls, the average rating for the physical aggression items was lower, with these forms of aggression rated as occurring less than ‘seldom’.

In the case of the absolute levels of girls’ aggression, it can be seen in Table 2 that except for physical aggression to girls, the average ratings for the aggression items were between seldom and sometimes. The average rating of girls’ physical aggression to girls was less than seldom.
### Table 1. Results for the Amount of Boys’ Aggression

<table>
<thead>
<tr>
<th>Type of Aggression</th>
<th>Grade</th>
<th>BBb</th>
<th>BGb</th>
<th>BGg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Physical</td>
<td>2</td>
<td>1.56</td>
<td>(0.80)</td>
<td>1.14</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>2.04</td>
<td>(0.75)</td>
<td>0.92</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>1.77</td>
<td>(0.73)</td>
<td>0.63</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>1.78</td>
<td>(0.64)</td>
<td>0.51</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>1.79</td>
<td>(0.75)</td>
<td>0.81</td>
</tr>
<tr>
<td>Verbal</td>
<td>2</td>
<td>1.81</td>
<td>(0.99)</td>
<td>1.38</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>2.57</td>
<td>(0.72)</td>
<td>1.67</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>2.50</td>
<td>(0.74)</td>
<td>1.50</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>2.75</td>
<td>(0.85)</td>
<td>1.63</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>2.40</td>
<td>(0.90)</td>
<td>1.54</td>
</tr>
<tr>
<td>Indirect</td>
<td>2</td>
<td>1.48</td>
<td>(0.84)</td>
<td>1.16</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>1.78</td>
<td>(0.79)</td>
<td>1.24</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>1.74</td>
<td>(0.74)</td>
<td>1.19</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>1.68</td>
<td>(0.66)</td>
<td>1.33</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>1.67</td>
<td>(0.77)</td>
<td>1.23</td>
</tr>
</tbody>
</table>

Note.  
1. These same-sex results have been previously reported (Owens, 1996; Owens & MacMullin, 1995) and are presented here for comparative purposes.

BBb = Boys’ aggression to boys: boys’ estimates. BGb = Boys’ aggression to girls: boys’ estimates. BGg = Boys’ aggression to girls: girls’ estimates

### Table 2. Results for the Amount of Girls’ Aggression

<table>
<thead>
<tr>
<th>Type of Aggression</th>
<th>Grade</th>
<th>GGg</th>
<th>GBg</th>
<th>GBb</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Physical</td>
<td>2</td>
<td>0.81</td>
<td>(0.60)</td>
<td>0.75</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>0.76</td>
<td>(0.57)</td>
<td>1.42</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>0.90</td>
<td>(0.49)</td>
<td>1.16</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>0.76</td>
<td>(0.58)</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>0.80</td>
<td>(0.56)</td>
<td>1.08</td>
</tr>
<tr>
<td>Verbal</td>
<td>2</td>
<td>1.41</td>
<td>(0.84)</td>
<td>1.05</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>1.76</td>
<td>(0.79)</td>
<td>1.65</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>2.41</td>
<td>(0.77)</td>
<td>1.96</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>2.08</td>
<td>(0.81)</td>
<td>2.14</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>1.90</td>
<td>(0.88)</td>
<td>1.69</td>
</tr>
<tr>
<td>Indirect</td>
<td>2</td>
<td>1.41</td>
<td>(0.83)</td>
<td>1.02</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>1.90</td>
<td>(0.65)</td>
<td>1.08</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>2.19</td>
<td>(0.79)</td>
<td>1.39</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>2.31</td>
<td>(0.65)</td>
<td>1.70</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>1.94</td>
<td>(0.81)</td>
<td>1.29</td>
</tr>
</tbody>
</table>

Note.  
1. These same-sex results have been previously reported (Owens, 1996; Owens & MacMullin, 1995) and are presented here for comparative purposes.

GGg = Girls’ aggression to girls: girls’ estimates. GBg = Girls’ aggression to boys: girls’ estimates. GBb = Girls’ aggression to boys: boys’ estimates
The absolute levels of aggression were analyzed first to examine differences according to target-of-aggression, separately for boys and for girls. To simplify the presentation, the data in the target-of-aggression analyses used each sex as their own informant (i.e. boys’ estimates of their aggression to boys and to girls, and girls’ estimates of their aggression to girls and to boys). The results are first presented for sex-of-target differences, then Grade-level, and finally analyses are reported to examine sex-of-informant differences. In the case of the results pertaining to Grade-level, most emphasis is placed on the interactions, to determine whether the target-of-aggression differences varied according to the Grade level.

**Sex-of-target.** The overall MANOVA showed a difference in boys aggression according to the sex-of-target \( (F(3, 430) = 63.71, p < .001) \). Boys directed more physical \( (F(1, 432) = 173.83, p < .001) \), verbal \( (F(1, 432) = 104.46, p < .001) \) and indirect \( (F(1, 432) = 34.73, p < .001) \) aggression to boys than to girls. The MANOVA results also showed a sex-of-target difference for girls’ aggression \( (F(3, 394) = 56.50, p < .001) \). Girls were reported as directing more physical aggression to boys than to girls \( (F(1, 396) = 14.83, p < .001) \), but less verbal \( (F(1, 396) = 6.70, p < .01) \) and less indirect aggression \( (F(1, 396) = 75.06, p < .001) \).

**Grade-level** In the above analysis of boys’ aggression, there was a significant Grade-level effect \( (F(9, 1296) = 9.82, p < .001) \, and an interaction between target-of-aggression and Grade-level \( (F(9, 1296) = 3.35, p < .001) \). The ANOVAs showed this interaction to be significant for physical aggression only \( (F(3, 432) = 6.51, p < .001) \). Post-hoc tests showed that the difference between boys’ physical aggression to same- and cross-sex targets was significant at each Grade level \( (p < .01) \). The data in Table 1 suggest that that interaction arose because of a trend towards a larger difference in boys’ physical aggression directed to boys and to girls in the upper Grades. Grade-level \( (F(9, 1188) = 15.73, p < .001) \) and the interaction between target-of-aggression and Grade-level \( (F(9, 1188) = 5.11, p < .001) \) also were significant for girls’ aggression. Again, the ANOVAs showed that the interaction was significant for physical aggression only \( (F(3, 396) = 4.55, p < .01) \). The latter interaction seemed to arise because at Grade 2 girls were rated as directing more physical aggression to girls than to boys, but at each of the other Grades they were rated as directing more physical aggression to boys than to girls. The post-hoc tests revealed no significant difference between same- and cross-sex targets for girls’ physical aggression at Grade 2, but significant differences at each of the subsequent Grades \( (p < .01) \).

**Sex-of-informant.** Two analyses were conducted to examine the question of whether estimates of cross-sex aggression differed according to the sex of the informant. In the first analysis, the MANOVA compared estimates of boys’ aggression to girls, according to boy and girl informants. There was a significant multivariate effect for sex-of-informant \( (F(3, 412) = 11.58, p < .001) \), with this difference holding for physical \( (F(1, 414) = 26.53, p < .001) \), verbal \( (F(1, 414) = 32.08, p < .001) \), and indirect \( (F(1, 414) = 15.19, p < .001) \) aggression. The results in Table 1 show a consistent trend for girls to estimate that boys are more aggressive to girls than boys estimate that they are aggressive to girls. In the analysis of girls’ aggression to boys according to the sex-of-informant, the multivariate effect also was significant \( (F(3, 412) = 4.00, p < .01) \), but none of the univariate tests for the separate types of aggression was significant. It can be seen in Table 2 that there was no consistent trend for boys or for girls to estimate higher levels of girls’ aggression to boys.
fact that there was no significant sex-of-informant by Grade-level effect in these analyses provided no evidence that a sex-of-informant difference might be apparent at some Grade levels and not at others.
Differences in style of aggression

The analyses undertaken to examine style of aggression were based on a measure of the ratio of one form of aggression to another. Attention was directed first to the ratio of physical to indirect aggression, and second to the ratio of verbal to indirect aggression, two ratios that seem to be associated with the principal stylistic differences in aggression between males and females. The results for these ratios are given in Tables 3 and 4. The principal analyses were again 2 (either sex-of-target, sex-of-actor, or sex-of-informant) by 4 (Grade level) MANOVAs with follow-up ANOVAs for each type of aggression. In view of the use of a ratio score, tests of skewness were conducted on the distributions. Evidence of positive skewness was obtained, and following the recommendations of Tabachnick and Fidell (1996), all of the data were transformed using the square root procedure. This generally resulted in the elimination of the skewness. The results are presented first for the ratio of physical to indirect aggression, and then for the ratio of verbal to indirect aggression. The results deal first with sex-of-target, then Grade level, and finally sex-of-informant. In order to simplify the presentation, the question of sex-of-target differences are examined using each sex as their own informant (i.e. boys’ estimates of their aggression to boys and to girls, and girls’ estimates of their aggression to girls and to boys). Results are presented first for boys’ aggression, and then for girls’ aggression.

Boys’ style of aggression

Sex-of-target. From the ratios given in Table 3 it can be seen that for boys’ aggression to boys versus to girls, it was estimated that they used relatively more physical aggression than indirect aggression to boys, but not to girls, and more verbal aggression than indirect aggression to both boys and girls. In the MANOVA examining sex-of-target, a significant multivariate effect was obtained ($F(2, 431) = 53.00, p < .001$). The follow-up ANOVAs gave significant differences for both the physical to indirect ratio ($F(1, 432) = 105.59, p < .001$) and for the verbal to indirect ratio ($F(1, 432) = 22.85, p < .001$). These results show that boys’ styles of aggression were estimated (by boys) to differ according to the target of aggression. In comparison with indirect aggression, boys were reported as being relatively more physical and verbal in their aggression to other boys than to girls.

In order to clarify further the cross-sex differences in style, an additional analysis was conducted comparing the styles of boys’ aggression to girls and that of girls’ aggression to girls. The issue here relates to whether the difference in style of boys’ aggression to girls is comparable to the style of aggression that girls use with girls. This analysis was conducted using boys’ estimates of their cross-sex aggression and the results from girls about girls’ aggression to girls. The MANOVA yielded a significant sex-of-target difference ($F(2, 413) = 41.41, p < .001$), with the follow-up ANOVAs showing a difference for both the ratio of physical to indirect ($F(1, 414) = 79.33, p < .001$) and for the ratio of verbal to indirect ($F(1, 414) = 39.76, p < .001$). These results show that whereas boys’ style of aggression differed for cross-sex targets, it remained significantly different from estimates of the style of aggression that girls directed to other girls.

Grade level. In the above MANOVA in which sex-of-target was examined, there was a significant multivariate effect for Grade level ($F(6, 864) = 14. 53, p < .001$) as well as an interaction between target-of-aggression and Grade level ($F(6, 864) =$
3.80, \( p < .001 \)). The latter interaction held for the ratio of physical to indirect aggression (\( F(3, 432) = 7.69, p < .001 \)), but not for the ratio of verbal to indirect aggression. Post-hoc tests on the interaction for physical to indirect aggression showed that the difference between same- and cross-sex targets was not significant at Grade 2, but was significant at each subsequent Grade (\( p < .01 \)). There was a suggestion from the data in Table 3 of a decline in the ratio of physical to indirect aggression of boys to girls with increasing age, with a greater relative use of indirect strategies in cross-sex aggression for the later Grades.

**Sex-of-informant.** The issue of whether the ratios for boys’ cross-sex aggression differed according to the sex of the informant was examined using a MANOVA comparing boys’ estimates of their cross-sex aggression with girls’ estimates of boys’ cross-sex aggression. The multivariate effect for sex-of-informant was significant (\( F(2, 413) = 4.22, p < .05 \)), but was significant for only the ratio of physical to indirect aggression (\( F(1, 414) = 7.34, p < .01 \)). It can be seen in Table 3 that the ratio of physical to indirect aggression for boys to girls was higher according to girls’ estimates than for boys’ estimates. That is, with respect to boys’ cross-sex aggression, girls’ reports more than boys’ reports suggested that boys used relatively more verbal than indirect aggression. There was no significant informant by Grade level interaction, suggesting a consistent tendency across Grades for boys and girls to differ in their estimates of boys’ style of aggression to girls.

**Girls’ style of aggression**

**Sex-of-target.** From the ratios given in Table 4 it can be seen that generally girls’ style was to use more indirect than physical aggression, and to be somewhat more verbal than indirect. In the MANOVA examining sex-of-target, a significant multivariate effect was obtained (\( F(2, 395) = 70.50, p < .001 \)), with this holding both for the ratio of physical to indirect aggression (\( F(1, 396) = 141.17, p < .001 \)) and for the ratio of verbal to indirect aggression (\( F(1, 396) = 57.29, p < .001 \)). These results show that, according to girls, girls’ style of aggression differed for same- and cross-sex targets. It is apparent from Table 4 that when girls are aggressive to boys they are relatively more physical and verbal. Alternatively, it can be said that girls’ use of indirect aggression is more a feature of their aggression to girls than to boys.

Additional analyses were conducted to determine whether there were differences between the estimated style of aggression that girls directed to boys and that boys directed to other boys. This assists with the question of whether the style of aggression that girls direct to boys might be similar to the style of aggression that boys use with boys. The MANOVA showed a significant multivariate effect (\( F(2, 413) = 10.71, p < .001 \)), with the difference evident for both the ratio of physical to indirect aggression (\( F(1, 414) = 21.05, p < .001 \)), and the ratio of verbal to indirect aggression (\( F(1, 414) = 10.66, p < .001 \)). These findings indicate that the style of aggression of girls to boys differed from the style of boys’ aggression to boys. In Table 4 it can be seen that boys’ aggression to boys involved relatively less use of indirect aggression than was the case for the estimates of girls’ aggression to boys.

**Grade level.** The above MANOVA in which sex-of-target was examined yielded a significant Grade level effect (\( F(6, 792) = 16.60, p < .001 \)), and an interaction between sex-of-target and Grade level (\( F(6, 792) = 6.96, p < .001 \)). The follow-up ANOVAs showed the latter interaction held for both the ratio of physical to indirect aggression (\( F(3, 396) = 10.82, p < .001 \)) and for the ratio of verbal to indirect aggression.
Post-hoc analyses showed in the case of the ratio of physical to indirect that the same- versus cross-sex difference was significant (p < .01) at each Grade level. From the results in Table 4, however, it can be seen that the difference seemed to be greater for Grade 6 than for other Grades. The post-hoc analyses of the ratio of verbal to indirect aggression showed no significant difference for same-versus cross-sex target in Grade 2, but significant differences at each subsequent Grade (p < .01).

**Sex-of-informant.** The question of whether the ratios for girls’ cross-sex aggression differed according to the sex of the informant was investigated using a MANOVA comparing girls’ and boys’ estimates of the style of girls’ cross-sex aggression. The effect for sex-of-informant was significant \( (F(2, 413) = 5.49, p < .01) \), with this evident only for the ratio of verbal to indirect aggression \( (F(1, 414) = 8.81, p < .01) \). It can be seen in Table 4 that when girls estimated girls’ aggression to boys, greater prominence was given to verbal aggression over indirect aggression than in boys’ estimates of girls’ aggression to boys. When seen the other way, boys seemed to perceive relatively more indirect aggression in the style of aggression that girls directed to boys.

**Discussion**

The present results showed that reports of both boys’ and girls’ aggression differed according to whether the target was same- or cross-sex. The difference for same-versus cross-sex targets held for absolute levels of aggression as well as for styles of aggression. As predicted, there were variations in the results for children in different Grade levels, with the most important effects being associated with greater differences in the style of boys’ aggression to girls in the upper Grades. Finally, differences according to sex-of-informant also were obtained.

Whereas the data provided expected evidence of boys directing more aggression to boys than to girls, the findings for the amount of girls’ same- and cross-sex aggression were less clear-cut. The results suggested that girls directed more physical aggression to boys than to girls, but more verbal and indirect aggression to girls than to boys. The findings, therefore, are not consistent with a proposition that both girls and boys will be less aggressive towards girls than towards boys. Rather, the data suggest that in the case of some forms of aggression, girls’ aggression is directed more at other girls than to boys. The latter result is consistent with the now often reported findings of indirect aggression in girls (Bjorkqvist, 1994; Bjorkqvist et al., 1992; Crick & Grootpeter, 1995; Crick et al., 1996; Rys & Bear, 1997), and indicates that most of this aggression is directed at other girls. For example, the present data showed that at each Grade, girls were reported as using indirect aggression more with other girls than with boys.

With respect to boys’ aggression being directed more to boys than to girls, the present data are consistent with the findings of Frodi et al. (1977) and with the meta-analysis conducted by Eagly and Steffen (1986), as well as with chivalry norms, where males are expected to be less aggressive to females (Eagly & Crowley, 1986). Because earlier research has primarily concentrated on adults, the results reported here add to the existing research by investigating children and adolescents. The current results add indirect aggression as another form of aggression that boys appear to direct more to boys than to girls.

The findings for style of aggression suggest that both boys and girls use different styles for same- versus cross-sex targets. However, the results also showed that both
boys’ and girls’ styles of aggression to cross-sex targets did not match the style of aggression used by the other sex. This means that the present evidence is consistent with a conclusion that both boys and girls show partial adjustment to the cross-sex context: they retain elements of their within-sex style, but modify the style towards that used by the other sex.

The results on sex-of-target differences in style of aggression, therefore, provided partial support for the prediction of a carry-over into cross-sex interactions of interpersonal styles developed for and within sex segregated relationships. However, they are also partially consistent with the notion that children will adjust their interpersonal style (including their style of aggression) according to whether it is a same-sex or cross-sex context. The latter finding also has parallels in the literature. For example Crick et al. (1996) found that both boys’ and girls’ aggression took a somewhat different form for same- and cross-sex encounters. Gervai and Turner (1996) reported differences in boys’ styles within same- and cross-sex interactions. The present results on differences in style between same- and cross-sex targets is also consistent with data showing that in comparison with the same-sex context, girls’ style is more coercive (Miller, Danaher, & Forbes, 1986) and more controlling (Leaper, 1991) when with boys. Finally, insofar as the present data show that boys’ style of aggression with girls is similar to the style used by girls with girls (being relatively more indirect), they are compatible with the results of Leaper (1991) who found that boys used more collaborative interactions when with girls.

Findings that children adjust to some degree to the cross-sex context raises questions about the primacy of same-sex peer experiences in socialization. According to Maccoby (1988, 1990), relationship styles and strategies are learned in same-sex peer experiences, which are then used in cross-sex encounters. A basis for this proposition is that same-sex relationships, friendships, and networks differ for boys and for girls (Benenson, Apostoleris, & Parnass, 1997; Bukowski & Kramer, 1986; Jones & Dembo, 1989; Maccoby, 1995). Accordingly, emphasis has been placed on the separate social worlds of girls’ and boys’ groups and relationships (Benenson, Apostoleris, & Parnass, 1997; Leaper, 1994; Maccoby, 1995; Serbin, Moller, Gulko, Powlishta, & Colburne, 1994), or as Voss (1997) indicated, ‘girls and boys are described as occupying separate spheres’ (p. 238, emphasis in original).

Although same-sex groups are clearly a strong feature of early and middle childhood, children at the same time also participate in cross-sex interactions and relationships (Archer, 1992). There is evidence that cross-sex encounters and relationships in themselves can be viewed as a separate social world (Benenson, Del Bianco, Philippoussis, & Apostoleris, 1997; Bukowski, 1990; Bukowski, Gauze, Hoza, & Newcomb, 1993; Dolgin & Kim, 1994; Hops et al., 1997; Leaper, 1991). Accordingly, it is possible to conceive children’s cross-sex relationships as occurring in parallel with same-sex relationships, with children to some degree learning separate patterns of interaction in same-sex and cross-sex relationships, rather than learning strategies from same-sex relationships that are transferred to cross-sex relationships. Some evidence supporting a position that the cross-sex situation could be an important socialization context in its own right has been reported by Gervai and Turner (1996). They found that boys who engaged in more cross-sex interactions behaved differently in cross-sex interactions from those who mainly interacted in sex-segregated groups (e.g., the former were lower in terms of aggression and showing-off when interacting with girls).

It should not be taken from this discussion of cross-sex experiences for children that the ’cross-sex context’ is assumed to be the same for boys and girls. A possible
difference in the cross-sex context for boys and girls is suggested by a number of studies (Kolaric & Galambos, 1995; Leaper, 1991; Voss, 1997). For example, the results of Voss (1997) indicate that the strategies and behaviour of boys and girls in cross-sex interactions could differ, for instance, by boys being more likely to cause disputes and establish new rules for games, and girls being more likely to agree to conditions set by boys. Consistent with the latter results, the present data also suggested that boys’ and girls’ cross-sex aggressive styles contain some elements in common with their same-sex styles. Therefore, although cross-sex encounters probably represent a separate context in which children learn about relationship styles and strategies, boys and girls would be expected to carry into cross-sex encounters some learning and expectations from their same-sex experiences.

As predicted, in the present results there were some Grade related differences in the same- versus cross-sex differences in style. The strongest evidence of a modification in boys’ style of aggression toward cross-sex targets occurred in the later Grades, possibly arising from a greater importance of, and experience in, cross-sex relationships in adolescence than at earlier ages (Maccoby, 1995). However, in the results for girls there was little evidence of a different cross-sex style being more apparent in later rather than earlier Grades. A possible contributor to this lack of a clear pattern in the results across Grades for girls is that there were some comparatively large differences between Grades 2 and 6 for girls. For example, there appeared to be a substantial increase in girls’ physical aggression towards boys from Grade 2 to Grade 6, which then declined in subsequent Grades. The earlier physical maturity of girls in late middle childhood could be a factor in an increase in physical aggression at Grade 6.

A final important aspect of the present results concerned evidence of difference in reported rates and styles of aggression according to the sex of the informant. In contrast to the results of Crick et al. (1996), where boys and girls had similar beliefs about the aggression of boys, but not about the aggression of girls, the present results showed that boys’ and girls’ provided different estimates of the amount and style of both boys’ and girls’ cross-sex aggression. In the case of Crick et al., the data related to what boys and girls do when they are mean to someone of the other sex. In our case, the data relate to how much each type of aggressive behavior is used, and this variation could be a factor in the apparently different finding.

To understand the differences in boys’ and girls’ reports of cross-sex aggression, it is possible to draw on evidence that boys and girls perceive aggression differently and react differently to aggression according to the sex of the aggressor (Bukowski, 1990; Bukowski et al., 1993; Hops et al., 1997). The interpretation of aggression therefore depends on which sex is being aggressive and which sex is rating it. Hops et al. (1997) argued that sex-based differences in the interpretation of, and reactions to, aggression possibly arise from gendered norms of behavior. This could be a reason that girls rated boys as more aggressive to girls than boys rated themselves, and why boys perceived that girls’ aggression to boys was somewhat more indirect in style than suggested by girls’ estimates of girl to boy aggression. Questions about the role of stereotypes and expectations in reports of aggression (Matlin, 1987) raise issues about possible limitations of the peer-estimation procedure for investigating aggression, and suggest the importance of somehow replicating the present findings using other procedures.

The main overall conclusions from the present findings are: (a) the target of aggression appears to be important in the understanding of boys’ and girls’ aggres-
sion; (b) some sex-stereotyped views of aggression based on previous research might be mainly a feature of same-sex aggression rather than cross-sex aggression; and (c) the cross-sex situation warrants more investigation, possibly as a separate context. These conclusions are based on data obtained using peer estimates of aggression, and as noted warrant further investigation using other procedures.

References


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**Note**

1. The notion of indirect aggression as used here overlaps considerably with that of relational aggression (e.g., Crick & Grot彼得, 1995). For consistency, the present research will be referred to using the term indirect aggression.