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Aggressive Girls in Canada

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**by
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Executive Summary

To date, the majority of studies of aggression have focused on aggressive boys, as their problem behaviours are more prevalent and serious than those of girls. Little attention has been directed to the risks and long-term consequences for aggressive girls. However, data on the development of aggressive girls into adulthood suggests that girls who are aggressive may also constitute a significant social concern in Canada. Further, as is the case with boys, it is unlikely that aggressive girls will grow out of their problems. Within this research paper, the biological and social risk factors related to the development of aggressive problems and the psychosocial difficulties associated with high levels of aggression in girls are examined.

Children who are aggressive tend to experience problems with hyperactivity/inattention and to come from homes in which there is ineffective parenting, family violence, and strained interactions between the parents and children and among siblings. With their peers, aggressive children experience higher levels of conflict, victimization, and associations with deviant peers as well as lower levels of contact and quality relations than nonaggressive children.

When girls and boys were compared, aggressive girls were rated as experiencing more problems than nonaggressive girls in the biological, family context, peer context, and psychosocial domains. In this sense, the problems of aggressive girls were comparable to those of boys. The processes associated with the development of aggressive behaviour problems in the home and peer group also appear to be similar for girls and boys. The disadvantages accruing for aggressive girls and boys appear not only in their relationships, but also in their psychosocial profiles. Both aggressive girls and boys suffer from higher levels of emotional, self-concept, difficult behaviour, and academic problems compared to their nonaggressive peers.

The analyses of the NLSCY data contribute substantially to the limited understanding of girls' aggression. Our understanding of biological and social risks and the psychosocial difficulties associated with girls' aggression provide direction for the early identification of girls at risk for aggressive behaviour problems and clear targets for intervention. Girls in families with violence, ineffective parenting, and high levels of conflict should be identified for supportive interventions. Girls require support in developing positive peer relations, and peers of aggressive children need to develop skills and an understanding to interact with aggressive children without exacerbating the problem through victimization.

More research is required to identify the developmental pathways of aggressive girls and effective intervention strategies to promote healthy development. With these data, we can begin to plan effectively for the optimal development of Canadian girls, who hold the future in their hands, as mothers of the next generation.

Sommaire

À ce jour, la majorité des études portant sur l'agressivité ont mis l'accent sur les garçons agressifs puisque leurs problèmes de comportement sont plus courants et graves que ceux des filles. On a fait peu de cas des risques et des conséquences à long terme de l'agressivité chez les filles. Cependant, les données sur les filles agressives qui passent à l'âge adulte portent à penser que les filles qui sont agressives peuvent également constituer un problème social important au Canada. En outre, comme c'est le cas des garçons, il est peu probable que les problèmes des filles agressives disparaissent avec le temps. Dans ce document de recherche, il est question des facteurs de risque biologiques et sociaux associés à la manifestation de problèmes d'agressivité, ainsi que des difficultés psychosociales liées à des niveaux élevés d'agressivité chez les filles.

Les enfants agressifs tendent à éprouver des problèmes d'hyperactivité et d'inattention et à venir de foyers marqués par des pratiques parentales inefficaces, de la violence familiale et des liens tendus entre les parents et les enfants et entre frères et sœurs. Comparativement aux enfants non agressifs, les enfants agressifs ont plus de conflits avec leurs pairs, ils sont plus souvent victimisés par ceux-ci, ils s'associent davantage à des camarades ayant un comportement déviant, et ils entretiennent moins de contacts et de relations de qualité.

Il ressort que les filles agressives connaissent plus de problèmes que les filles non agressives du point de vue biologique, familial et psychosocial et dans le contexte des relations avec les pairs. À cet égard, les problèmes des filles agressives sont comparables à ceux des garçons. Les processus associés à la manifestation de problèmes d'agressivité à la maison et au sein du groupe de pairs semblent également similaires chez les filles et les garçons. Les filles et les garçons agressifs semblent défavorisés non seulement dans leurs rapports, mais également dans leur profil psychosocial. Tant les filles que les garçons agressifs éprouvent plus de problèmes affectifs, comportementaux, scolaires et d'image de soi, comparativement à leurs pairs non agressifs.

L'analyse des données de l'ELNEJ contribue de façon marquée à la compréhension limitée de l'agressivité chez les filles. La compréhension des risques biologiques et sociaux et des difficultés psychosociales associées à l'agressivité chez les filles nous donne des éléments permettant de repérer rapidement les filles qui pourraient présenter des problèmes de comportement agressif et d'arrêter des objectifs d'intervention clairs. Les filles qui vivent dans des familles marquées par la violence familiale, des pratiques parentales inefficaces et des niveaux élevés de conflit doivent être repérées à des fins d'intervention de soutien. Les filles ont besoin d'aide pour établir des relations positives avec leurs pairs, et les pairs d'enfants agressifs doivent acquérir des compétences et une compréhension leur permettant d'interagir avec eux sans exacerber le problème par la victimisation.

D'autres travaux de recherche s'imposent sur le cheminement développemental des filles agressives et sur des stratégies d'intervention efficaces visant à promouvoir un développement sain. Grâce à ces données, nous pouvons entreprendre la planification efficace du développement optimal des filles canadiennes, qui ont l'avenir entre leurs mains, en qualité de mères des membres de la prochaine génération.

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1. Introduction: Theoretical and Empirical Background

To date, the majority of studies of aggression have focussed on the development of disorder and outcomes for aggressive boys, as their problem behaviours are more prevalent and serious than those of girls. Within this research paper, we examine the biological and social risk factors presumed to be associated with the development of aggressive problems and the psychosocial difficulties associated with high levels of aggression in girls. We focused our analyses on the data for children aged 10 and 11 in the National Longitudinal Survey of Children and Youth (NSLCY). The pattern of results for girls has been compared to that for boys to examine similarities and differences in the processes and correlates presumed to underlie aggressive behaviour problems.

To understand the problems of aggressive girls, researchers have made two recommendations: an expanded definition of aggression and a gender-specific measurement strategy. In the past decade, the definition of aggression has been expanded from the traditional perspective of physically assaultive behaviour to include the behaviours that typically comprise girls' attacks including indirect and verbal aggression (Bjorkvist, Osterman, & Kaukiainen, 1992), aggression directed at peer relationships (Crick & Grotpeter, 1993), and aggression directed at damaging self-esteem and/or social status (Galen & Underwood, 1997). The call for an inclusive definition of aggression has been accompanied by the recommendation for gender-specific assessments and normative data (Keenan & Shaw, 1994; Serbin, Moskowitz, Schwartzman & Ledingham, 1991; Zoccolillo, 1993). Zoccolillo (1993) contends that to identify highly aggressive girls, adjustment problems should be evaluated relative to their age and gender group. Within a gender-specific framework, girls who are deviant compared to their peers would be considered at risk for behaviour problems (even though their problems are not as severe as boys). In contrast, Zahn-Waxler (1993) argues against gender-specific assessments which require fewer symptoms for a classification of disorder. She contends that this strategy perpetuates the stereotypic message that exhibiting aggression and expressing anger are inappropriate for girls and women. The National Longitudinal Study on Children and Youth (NLSCY) incorporates an inclusive set of items to measure aggression; therefore, the substance of these recommendations can be assessed.

To date, little attention has been directed to the risks and long-term consequences for aggressive girls, as their problem behaviours are less prevalent than those of boys. The Cycle 1 NLSCY data

provide norms for girls' aggression indicating that at every age, girls are rated by their parents as less physically aggressive than boys (Tremblay et al., 1995). Conversely, girls were rated as engaging in slightly more indirect aggression than boys at every age. Given that fewer girls experience aggressive behaviour problems compared to boys, one might question whether we should be concerned about aggressive girls. Recent data from Statistics Canada indicate that the prevalence of violent offending among adolescent girls has increased much faster than for adolescent boys. In 1997, the rate for violent crimes increased 5% for girls and decreased 4% for boys (Statistics Canada, 1998). In addition, data on the development of aggressive girls into adulthood suggest that girls who are aggressive may well constitute a significant social concern within Canada.

Similar to boys, it is unlikely that aggressive girls will outgrow their problems. The stability of aggressive behaviour problems for girls is as high as that for boys (Huesmann et al., 1984). Longitudinal data indicate that girls identified by their classmates as aggressive in childhood may experience a range of adjustment problems in adolescence and adulthood including school drop out, teen parenthood, and parenting difficulties, harsh punishment of children, and criminality (Huesmann et al., 1984; (Serbin, Cooperman, Peters, Lehoux, Stack, and Schwartzman, in press). Longitudinal research on female and male delinquents indicates that the problems of girls and boys may manifest differently in adulthood. Delinquent girls were less likely than a matched sample of boys to be arrested for violent offenses (Lewis, Yeager, Cobham-Portorreal, Klein, Showalter, & Anthony, 1991). Other aspects of these women's lives, however, reveal significant dysfunction, violence, and victimization. More than half of the women had been involved in "extraordinarily violent relationships with men" (Lewis et al., 1991, p. 200). Over two-thirds of the women had children and their child-rearing was described with a litany of problems, leading Lewis and her colleagues to conclude that they had "negligible abilities to provide even minimal support for the next generation" (1991, p. 201). From a social policy perspective, therefore, the problems of aggressive girls merit attention and intervention as these girls become the mothers of the next generation and a potential pivotal point in the intergenerational transmission of violence. The present analyses lay the foundation for considering the developmental trajectories of aggressive girls and implications for prevention and early intervention.

A broad theoretical framework is required to assess the complex interplay of risk factors associated with the development of aggressive behaviour problems. According to the developmental model of risk (Rutter, 1990), risk factors, which reside both within individuals and their environments, lead directly to disorder. If risks persist, the effects on children's adjustment and on their interactions with others become progressively burdensome (Caspi, Elder, & Bem, 1987). Therefore, for aggressive behaviour problems, development is determined by an interaction of individual characteristics with environmental contexts.

The present analyses examine the biological and social context risk factors and the psychosocial difficulties associated with physical and indirect aggression for 10- and 11-year-old girls. The patterns for girls are compared to those for boys.

1.1 Biological Factors

Some individual factors may place children at risk for developing aggressive behaviour problems. Biological variables interact with contextual factors to impact on children's development differentially by developmental stage. In middle childhood, hyperactivity is a neuro-psychological risk factor related to the development of aggressive behaviour problems of both boys and girls (Barkley, 1990; Moffitt, 1993). There is some evidence that the symptoms of girls and boys differ. Girls tend to show symptoms related to Attention Deficit Disorder (ADD) such as inattentiveness and other cognitive impairments, whereas boys show symptoms related to hyperactivity, such as disruptive behaviour and high activity levels (Szatmari, Boyle, & Offord, 1989). In a recent review, Loeber & Keenan (1994) concluded that the influence of ADD on the persistence and seriousness of problems was less for girls than for boys, although a higher proportion of ADD girls is likely to become conduct disordered than ADD boys. Bates and his colleagues (1991) found that girls' hyperactivity at age three predicted externalizing behaviour problems at eight years of age, whereas hyperactivity was not a significant predictor for boys' externalizing problems. With different measures and classifications, it is difficult to draw conclusion about girls' hyperactivity as a risk for aggression. It appears, however, that although less prevalent among girls than boys, hyperactivity may pose a comparatively high risk for girls' development of aggressive problems.

At the end of the developmental period covered by Cycle 1 of the NLSCY, pubertal timing may present as a risk factor for aggressive girls (Stattin & Magnusson, 1990). As with hyperactivity,

this individual variable interacts with contextual factors to place girls at risk: early pubertal maturation appears to amplify the antisocial tendencies of aggressive girls by bringing them into contact with older, deviant peer groups (Caspi et al., 1993). There is some inconsistency in the strength of early pubertal timing as a risk factor: With an American sample, Cairns and Cairns (1994) found little evidence that early maturing girls were more aggressive and deviant.

Hypotheses related to the biological variables are as follows:

- Aggressive girls will be rated as having more problems with hyperactivity/ inattention than nonaggressive girls.
- Aggressive girls who have experienced pubertal changes engage in more difficult behaviours than aggressive girls who have not started pubertal changes.
- Hyperactivity/ inattention correlates positively to ratings of both physical and indirect aggression. These correlations will be similar to or higher than those of boys.

1.2 Social Context Factors

Social experiences within the family and peer contexts may be associated with girls' aggressive behaviour problems. Given that aggression is inconsistent with sex-role expectations for girls, experiences within the family and peer contexts may operate somewhat differently for girls and boys. Given their greater propensity to play at home (Maccoby, 1986), girls' development may be more contingent on family circumstances than that of boys. Potential risk processes for the development of girls' aggression include: family violence, ineffective parenting, parent-child conflict, and sibling conflict. Our research on children of battered women indicated that girls were rated as having more externalizing and internalizing behaviour problems than boys (Moore & Pepler, 1998). Ineffective parenting may relate to the development of girls' aggression, as it does for boys (Patterson, Reid, & Dishion, 1992). Relations within the family may present opportunities for the expression of aggression by girls that are not present in the larger social contexts of school and community. In our study of children of battered women, extreme forms of aggression toward the sibling was a key variable differentiating well and poorly adjusted girls (Moore & Pepler, 1998). Therefore, conflicts with parents and siblings may be critical in the formation of girls' aggressive behaviour problems.

Hypotheses related to the family context are as follows:

- Aggressive girls will have parents who report more family violence and more ineffective parenting than nonaggressive girls; the parent and child reports of parent-child conflict, and sibling conflict will be higher for the aggressive compared to the nonaggressive girls.
- For girls, family violence, ineffective parenting, parent-child conflict, and sibling conflict relate to ratings of aggression. These correlations will be similar to or higher than those of boys.

The influences of the peer group may operate somewhat differently for aggressive girls and boys because girls' aggression may be less accepted by peers than boys' aggression (Huesmann et al., 1992). Whereas aggressive boys are often well integrated into a peer group, aggressive girls are often more disliked and more likely to be rejected and isolated from their peer groups (Serbin et al., 1993). Aggressive girls, therefore, may be more likely than boys to drift toward deviant peers in response to peer rejection. For aggressive girls in particular, a lack of positive peer relations predicts significant adjustment problems in adolescence (Coie et al., 1992). Our observational research indicates a high degree of overlap between aggression and victimization (Craig & Pepler, 1997). Sixty-eight percent of the children we observed as bullies or victims on the school playground were observed in both the role of bully and the role of victim. Therefore, when we assess the peer problems of aggressive girls, we must consider the possibility that they are also victimized. Taken together, the scant research on aggressive girls suggests that they may be at equal or greater risk for rejection and victimization in the peer group than aggressive boys.

Hypotheses related to the peer context are as follows:

- Aggressive girls will be rated as having significantly more peer conflict, fewer peer contacts, greater association with deviant peers, less positive peer relations, and more victimization as compared to nonaggressive girls.
- Peer conflict, peer contacts, association with deviant peers, quality of peer relations, and victimization relate to ratings of girls' aggression. These correlations will be similar to or higher than those of boys.

1.3 Psychosocial Factors

Until recently, there was little research or social concern for the problems of aggressive girls as their aggressive behaviours are less prevalent and serious than those of boys. Although there are fewer aggressive girls and their deviance in the community is less severe than that of boys, there may still be considerable individual and social costs to the development of aggressive behaviour in girls. Within the NLSCY data, the psychosocial variables provide insight into the range of difficulties associated with high levels of aggression in girls.

Although early aggressiveness of both girls and boys predicts later problems, longitudinal research indicates that the manifestation and context for aggression may differ for women and men. Robins (1966, 1986) found different adulthood outcomes for conduct-disordered girls and boys. The outcomes differed in form: girls were somewhat less likely than boys to be diagnosed with antisocial personality as adults, but more likely to experience internalizing disorders such as anxiety and depression. Robins (1986) questioned whether researchers have erred in expecting the same long-term outcomes for girls as for boys. Within the NLSCY data, we can examine not only externalizing problems (e.g., high levels of aggression, delinquency), but also emotional problems such as anxiety and depression experienced by aggressive girls. Other psychosocial variables of interest include self concept, prosocial behaviours, difficult behaviours, and academic problems.

The following hypotheses are related to psychosocial adjustment:

- Aggressive girls will be rated as having significantly more emotional problems, lower self concept, fewer prosocial behaviours, more difficult behaviours, and more academic problems than nonaggressive girls.
- Emotional problems, self concept, prosocial behaviours, difficult behaviours, and academic problems relate positively to ratings of girls' aggression. The correlation for emotional problems, in particular, will be similar to or higher than those of boys.

2. Method: Measures

Data for the present analyses have been drawn from the parent and child reports available in the National Longitudinal Survey of Children and Youth, Cycle 1. A decision was made to limit the analyses to the 10- and 11-year-old children for two reasons:(i) these are the only children in the sample for whom there were self report (child) data, as well as parent data; (ii) this is the age at which antisocial behaviour (e.g., delinquency, crime) begins to increase (Cairns & Cairns, 1994; Patterson, Capaldi, & Bank, 1991). The total sample for the present analyses comprised: 849 10-year-old boys, 811 10-year-old girls, 792 11-year-old boys, and 772 11-year-old girls.

Groups of highly aggressive girls and boys were identified through the following steps. First, the physical and indirect aggression scores were summed to derive two total aggression scores – one for parent ratings and one for children’s own ratings. Percentiles were calculated for four distributions: girls’ and boys’ total-parent and total-child aggression scores. Highly aggressive boys and girls were identified using the gender-specific top 25% as a criterion score. This cutoff was chosen to identify those children who were rated to be engaging in high levels of aggression compared to other girls or boys of their age. A second criterion was applied to the selection: both the child’s and the parent’s ratings on total aggression had to fall within the top 25% for the child to be selected as aggressive. The criterion of dual identification provides higher reliability in selecting the sample ; however, the aggressive behaviour problems of the selected samples are likely more severe than if a single informant were used. Using these criteria, we selected 98 10-year-old boys, 47 10-year-old girls, 75 11-year -old boys, and 44 11-year-old girls for the aggressive groups. It is interesting to note that the percentage of girls (5.7%) identified with this strategy was substantially lower than the percentage of boys (10.5%). This discrepancy suggests that there is less agreement in the parents’ and children’s reports for girls than for boys and that the girls in the selected sample may be somewhat more extreme than the boys in terms of aggressive behaviour problems.

Groups of nonaggressive girls and boys were identified using the lowest 25% as a criterion score. If both the child’s and the parent’s ratings on total aggression fell within the bottom 25% for their gender, then the child was selected as nonaggressive. Using these criteria, we selected 93

10-year-old boys, 123 10-year-old girls, 89 11-year -old boys, and 130 11-year-old girls for the nonaggressive groups.

The biological, social context (family, peer), and psychosocial variables of interest were selected from the survey instruments as described in the “Overview of Survey Instruments for 1994-1995 Data Collection” (Statistics Canada, 1995). The specific questions used for the various constructs are included in Appendix A.

3. Results and Discussion

The analyses of the NLSCY data proceeded in three steps. To examine the first set of comparative hypotheses associated with the biological, social context, and psychosocial variables, we used the selected samples of aggressive and nonaggressive children. MANOVAS were conducted to determine differences between aggressive and nonaggressive girls in comparison to boys, with group (aggressive/nonaggressive) and gender as independent variables. Any significant effects were further examined with univariate analyses. Secondly, we used regression analyses with the full sample of 10- and 11-year old children to address the correlational hypotheses. We examined the correlations of the parent and child ratings of physical and indirect aggression with the biological, social context, and psychosocial variables. These correlations are presented in Appendix B. To assess the correlational hypotheses comprehensively, we conducted two regression analyses to determine which variables were associated with aggression and whether they were operating differently for girls and boys. Given the expected strong associations among variables with the same respondent (i.e., parent-parent or child-child), we chose a conservative test of the relations using parent reports to predict child-rated aggression and child reports to predict parent-rated aggression.

3.1 Ratings of Aggression

Because we selected the groups on the basis of their aggression score, we expected significant differences between the highly aggressive and nonaggressive groups for parent and children's ratings of physical and indirect aggression. The mean scores for the two groups of girls and boys are presented in Table 1. As expected, the aggressive group scored significantly higher than the nonaggressive group on physical and indirect aggression, Multivariate $F = 1148.73$, $df = 4,692$, $p .0001$. There was a significant gender by group interaction on the aggression variables, Multivariate $F = 27.49$, $df = 4,692$, $p .0001$. This interaction indicated that aggressive girls and boys differed, but there were no differences between nonaggressive girls and boys on the two aggression scores. Aggressive boys were more physically aggressive than their female counterparts; aggressive girls were more indirectly aggressive than their male counterparts for both parent and child reports.

Table 1: Mean Ratings of Aggression for Highly Aggressive Compared to Nonaggressive Children

	Parent Ratings		Child Ratings	
	Girls	Boys	Girls	Boys
Physical Aggression				
Highly Aggressive Group	2.8	3.9	6.4	8.6
Nonaggressive Group	0.0	0.0	.4	.4
Indirect Aggression				
Highly Aggressive Group	4.3	3.0	5.3	4.5
Nonaggressive Group	0.0	0.0	.4	.3

3.2 Biological Factors Related to Girls' Aggression

3.2.1 Hyperactivity/Inattention

We hypothesized that aggressive and nonaggressive girls would differ in ratings of hyperactivity/inattention. The means are presented in Table 2. For the parent ratings, the hypothesized group difference was significant, $F = 277.7$, $df = 1,694$, $p = .0001$. Aggressive children received higher parent ratings on hyperactivity/inattention than nonaggressive children. There was also an effect for gender, $F = 9.81$, $df = 1,694$, $p = .002$. Boys received higher ratings on hyperactivity/inattention than girls. The group by gender interaction was not significant.

The children's reports mirrored the parents' reports of hyperactivity/inattention. There was a significant effect for group, $F = 501.29$, $df = 1,689$, $p = .0001$. As expected the aggressive children reported more hyperactivity/inattention symptoms than the nonaggressive children. There was also an effect for gender, $F = 5.14$, $df = 1,689$, $p = .02$. Boys rated themselves higher on these symptoms than girls. It is interesting to note that on average, the aggressive girls report many more hyperactivity/inattention problems than nonaggressive boys. The group by gender interaction was not significant. In other words, aggressive girls were similar to aggressive boys in terms of hyperactivity/inattention scores, particularly when they were asked to rate their own problems of hyperactivity and inattention. Therefore, the hypothesis that aggressive girls would experience more problems of hyperactivity/inattention than nonaggressive girls was confirmed.

Table 2: Mean Ratings of Hyperactivity/Inattention for Highly Aggressive Compared to Nonaggressive Children

	Parent Rating		Child Rating	
	Girls	Boys	Girls	Boys
Hyperactivity/Inattention				
Highly Aggressive Group	5.9	7.1	7.0	7.3
Nonaggressive Group	2.1	2.6	2.3	2.9

3.2.2 Timing of Puberty

We hypothesized that aggressive girls who had experienced pubertal changes would engage in more difficult behaviours (e.g., staying out late, skipping school, drinking) than aggressive girls who have not started pubertal changes. For these analyses, puberty was defined as a positive response to at least two of the three questions assessing puberty for girls in the 10-11 year old questionnaire (i.e., started breast development, menstruation, or secondary hair growth). Of the 84 girls in the aggressive sample with puberty data, 55 indicated that they had begun at least two of the three puberty indicators. There were very few problems of difficult behaviours for either group of aggressive girls. The means were .28 and .29 for the aggressive girls who had not begun and who had begun pubertal development, respectively. The ANOVA comparing ratings of difficult behaviours for the girls who had started pubertal development with those who had not yet started indicated no significant difference.

The results did not support the hypothesis that aggressive girls who had started pubertal development early would be more likely to engage in difficult behaviours than those who had started late. This lack of an association is consistent with the American data (Cairns & Cairns, 1994). Very few of the girls in the NLSCY acknowledged any difficult behaviour problems. The age at which the questionnaires were administered (10- and 11-years-old) is just at the beginning of the period in which difficult behaviour problems such as staying out late, skipping school, and being in contact with the police begin to emerge. The mechanism for aggressive girls' movement into deviant behaviours is presumed to be through associations with older deviant boys (Caspi et al., 1993). The girls in the present sample are still young to be dating and associating with older boys. The expected patterns of higher risk for deviant behaviour problems for aggressive girls who have matured earlier may emerge in subsequent phases of the longitudinal survey.

3.3 Social Context Factors Related to Girls' Aggression

3.3.1 Family Variables

We hypothesized that aggressive and nonaggressive girls would differ on parent reports of family violence, ineffective parenting, and on parent and child reports of parent-child conflict, and sibling conflict. The means for these family variables for the aggressive and nonaggressive groups are presented in Table 3. There are no child ratings of family violence and ineffective parenting.

Table 3: Mean Ratings of Family Variables for Highly Aggressive Compared to Nonaggressive Children

	Parent Rating		Child Rating	
	Girls	Boys	Girls	Boys
Family Violence*				
Highly Aggressive Group	3.7	3.7		
Nonaggressive Group	3.9	3.9		
Ineffective Parenting				
Highly Aggressive Group	11.0	11.4		
Nonaggressive Group	6.4	6.7		
Parent-Child Conflict				
Highly Aggressive Group	2.1	2.1	2.4	2.2
Nonaggressive Group	1.3	1.3	1.5	1.5
Sibling Conflict				
Highly Aggressive Group	2.8	2.8	2.9	3.3
Nonaggressive Group	2.0	1.9	2.6	2.3

Note: * Family Violence question is scored positively: a higher score indicates less or no family violence.

Parents' reports on these variables were examined in a MANOVA with group (aggressive / nonaggressive) and gender as the independent variables. As expected, the MANOVA indicated an effect for group, Multivariate $F = 85.76$, $df = 4,600$, $p = .0001$. There was no effect for gender and no group by gender interaction. The follow-up univariate analyses indicated significant differences between the aggressive and nonaggressive groups on all the parent-report family variables. Parents of children in the aggressive group indicated more family violence, less effective parenting, more parent-child conflict, and more sibling conflict compared to parents of children in the nonaggressive group. There were no differences between boys and girls on these variables.

Children's reports of conflicts with their parents and siblings were examined in a MANOVA with group (aggressive / nonaggressive) and gender as the independent variables. There was a significant effect for aggressive group, Multivariate $F = 89.27$, $df = 2,645$, $p = .0001$, and a significant group by gender interaction, Multivariate $F = 4.91$, $df = 2,645$, $p = .008$. Parent-child conflict did not reveal a group by gender interaction in the univariate analyses: both aggressive girls and boys were more likely to report higher levels of conflict with their parents compared to their nonaggressive counterparts. The aggressive boys were more likely to report sibling conflict than the nonaggressive boys, who were lower than the nonaggressive girls on their reports of sibling conflict. There were no differences between boys and girls on these variables.

As hypothesized, the family variables differentiated the aggressive girls from the nonaggressive girls. Furthermore, aggressive girls were similar to aggressive boys in terms of all the family variables. Aggressive children were more likely to come from homes in with more family violence than nonaggressive children. This difference is consistent with many studies that find marital conflict to be one of the most significant predictors of children's aggression (Emery, 1989). Presumably, parents who cannot solve problems between themselves serve as models for their children, who may learn to use aggression as a means of resolving conflict.

The aggressive children came from families characterized by more ineffective parenting, and higher parent-child conflict and sibling conflict compared to the nonaggressive children. These data confirm the well-established relationship between family dysfunction and the development of children's aggressive behaviour problems (e.g., Patterson, et al., 1989). Patterson and his colleagues have identified the coercive processes that occur between parents and their children and also between siblings as critical to the "training" of aggression (Patterson, 1982; 1986).

We expected that sibling relationships would be a salient context in which girls' aggression is expressed. The sibling relationship differs from peer relationships in many ways that may increase the likelihood of girls being aggressive. The sibling relationship is enduring and cannot be ruptured by a serious altercation. Therefore, within the intimacy of a sibling relationship, girls may be more inclined to express aggression and less likely to suffer for their transgressions of sex-role norms. To some extent, our hypothesis was confirmed: Parents' reports of aggressive girls' and boys' sibling conflicts were equally high and aggressive girls reported higher conflict with their siblings than nonaggressive girls and boys. When children reported on their own sibling conflict, however, the aggressive boys reported the highest levels of conflict with their siblings.

3.3.2 Peer Variables

We hypothesized that aggressive and nonaggressive girls would differ on ratings of peer conflict, peer contact, deviant peers, peer relations, and victimization by peers. The means for these peer variables for the aggressive and nonaggressive groups are presented in Table 4. There were no parent reports of the quality of peer relations or victimization.

Table 4: Mean Ratings of Peer Variables for Highly Aggressive Compared to Nonaggressive Children

	Parent Rating		Child Rating	
	Girls	Boys	Girls	Boys
Peer Conflict				
Highly Aggressive Group	2.1	2.2	2.5	2.5
Nonaggressive Group	1.3	1.2	1.6	1.7
Peer Contacts				
Highly Aggressive Group	7.1	7.2	8.2	8.7
Nonaggressive Group	7.4	7.5	9.0	9.2
Deviant Peers *				
Highly Aggressive Group	3.4	3.0	3.3	3.0
Nonaggressive Group	3.8	3.7	3.8	3.7
Peer Relations				
Highly Aggressive Group			11.4	10.7
Nonaggressive Group			13.4	13.1
Victimization *				
Highly Aggressive Group			19.3	19.1
Nonaggressive Group			21.2	20.7

Note: *A higher score on the deviant peer and victimization variables indicates fewer problems.

The parent reports on peer variables were examined in a MANOVA with group (aggressive / nonaggressive) and gender as the independent variables. The MANOVA indicated a significant effect for group for the peer variables, Multivariate $F = 63.89$, $df = 3,670$, $p = .0001$. There were significant differences between the aggressive and nonaggressive groups on all three of the parent-report peer variables. All these differences were in the expected direction: aggressive children had more peer conflicts, fewer peer contacts, and more associations with deviant peers than nonaggressive children. There was also an effect for gender, Multivariate $F = 4.66$, $df = 3,670$, $p = .001$. The univariates revealed that the only gender difference was on the deviant peer variable: parents reported that boys had more deviant peers than girls. The group by gender interaction was not significant. In other words, aggressive girls and boys differed from nonaggressive girls and boys in the same ways.

The children's reports on the peer variables were also examined in a MANOVA with group (aggressive / nonaggressive) and gender as the independent variables. The MANOVA indicated a significant effect for group for the peer variables, Multivariate $F = 66.63$, $df = 5,638$, $p = .0001$. There were significant differences between the aggressive and nonaggressive groups on all five of the children's reports of peer relations. All these differences were in the expected direction:

aggressive children reported more peer conflicts, fewer peer contacts, more associations with deviant peers, less positive peer relations and more experiences of victimization than nonaggressive children. There was also an effect for gender, Multivariate $F = 4.55$, $df = 5,638$, $p .0001$. The univariate analyses indicated gender effects on peer relations and peer contacts. Girls reported more positive peer relations than boys and boys reported more peer contacts than girls.

The hypothesis that aggressive girls would experience more difficulties in their peer relations than nonaggressive girls was confirmed for all of the parent and child-rated variables. The patterns for the aggressive girls and boys were similar. These data are consistent with most studies on the peer relations of aggressive children. Their aggressive behaviour interferes with the development of positive friendships and many aggressive children are actively rejected by their peer groups (Parker & Asher, 1987). The extent of the peer difficulties of the aggressive children is exemplified by their significantly higher score on victimization. When they are not liked by peers, aggressive children are at risk for being bullied, having other children say nasty and unpleasant things, feeling unsafe, and feeling like an outsider at school. The aggressive children are then caught in reciprocally hostile interactions, which may maintain or exacerbate their aggressive tendencies.

3.4 Psychosocial Factors Related to Girls' Aggression

We hypothesized that aggressive girls would be rated as having more difficulties than nonaggressive girls in the psychosocial domains of emotional problems, self concepts, prosocial behaviours, difficult behaviours, and academic problems. We had also planned to include substance use as a variable in these analyses, but there were too few 10- and 11-year-olds who reported any substance use to conduct the analyses. The means for these psychosocial variables for the aggressive and nonaggressive groups are presented in Table 5. There were no parent reports of children's self-concepts or difficult behaviours.

The parent reports on psychosocial variables were examined in a MANOVA with group (aggressive / nonaggressive) and gender as the independent variables. The MANOVA indicated a significant effect for group for the peer variables, Multivariate $F = 102.94$, $df = 3,685$, $p .0001$, an effect for gender, Multivariate $F = 22.44$, $df = 3,685$, $p .0001$ and a significant group by gender interaction, Multivariate $F = 5.11$, $df = 3,685$, $p .002$. There was no univariate group by gender interaction and no main effect for gender for emotional problems; however, there was a

significant effect for group on this variable. Aggressive girls and boys were reported to have more emotional problems than nonaggressive girls and boys. The univariate group by gender interactions were significant for prosocial and academic problems. For both of these variables the discrepancy between aggressive and nonaggressive boys' ratings were greater than those for aggressive and nonaggressive girls.

Table 5: Mean Ratings of Psychosocial Variables for Highly Aggressive Compared to Nonaggressive Children

Psychosocial Variables	Parent Ratings		Child Ratings	
	Girls	Boys	Girls	Boys
Emotional				
Highly Aggressive Group	4.7	4.3	6.0	5.6
Nonaggressive Group	1.6	1.6	2.4	2.2
Self Concepts				
Highly Aggressive Group			11.5	11.9
Nonaggressive Group			14.4	14.5
Prosocial				
Highly Aggressive Group	13.2	10.7	13.9	12.1
Nonaggressive Group	14.6	13.6	16.9	15.0
Difficult Behaviours				
Highly Aggressive Group			.27	1.13
Nonaggressive Group			.03	.04
Academic Problems				
Highly Aggressive Group	2.0	2.5	2.3	2.3
Nonaggressive Group	1.4	1.6	1.6	1.7

The child reports on psychosocial variables were examined in a MANOVA with group (aggressive / nonaggressive) and gender as the independent variables. The MANOVA indicated a significant effect for group for the peer variables, Multivariate $F = 92.47$, $df = 5,657$, $p = .0001$, an effect for gender, Multivariate $F = 11.86$, $df = 5,657$, $p = .0001$ and a significant group by gender interaction, Multivariate $F = 3.49$, $df = 5,657$, $p = .004$. Similar to parent reports on the peer variables, there was no univariate group by gender interaction and no effect for gender for children's reports of their emotional problems; however, there was a significant main effect for group on this variable. Aggressive girls and boys reported that they had more emotional problems than nonaggressive girls and boys. For the self concept and academic problem scores, there was a significant main effect for group. Aggressive children were more likely to have lower self concept scores and more academic problems than nonaggressive children. For prosocial

behaviour there was a significant univariate effect for both group and gender. Aggressive children were more likely to have lower prosocial scores than nonaggressive children; girls had higher prosocial scores than boys. There was no significant group by gender interaction for children's self concept, academic problems, and prosocial behaviour. There was, however, a group by gender interaction for difficult behaviour. Aggressive boys were much more likely than any other group to report involvement in difficult behaviours.

The hypothesis that aggressive girls experience more psychosocial problems than nonaggressive girls was generally confirmed by the group comparisons. Aggressive girls were rated as having more emotional problems, lower self-esteem, fewer prosocial behaviours, more difficult behaviour and more academic problems than the nonaggressive girls. The only exception to this pattern was with parent ratings: parents of aggressive girls rated them relatively similar in prosocial as compared to nonaggressive girls. It appears, therefore, that aggressive girls experience a range of problems similar to aggressive boys, which should not be overlooked. Although the aggressive girls are reportedly exhibiting fewer physically aggressive and difficult behaviours than the aggressive boys, their associated problems are rated as comparably concerning. In other words, aggressive girls behaviour problems may not be as apparent, but their psychosocial development is equally impaired and deserving of intervention support as that of aggressive boys.

3.5 Variables Associated with Girls' and Boys' Aggression

Regression analyses were conducted with the full sample of 10- and 11-year-olds to determine which variables were associated with aggression and whether they operated differently for girls and boys. Parent reports of the biological, social context, and psychosocial variables were used to predict child-rated total aggression and child reports of the biological, social context, and psychosocial variables were used to predict parent-rated total aggression. To determine whether these variables have differential predictive power for boys and girls, an interaction term was computed for each variable and entered after the main effects. The two regressions are summarized followed by a discussion of the predictors of aggression.

3.5.1 Predicting Children's Reports of Aggression with Parent Reports

In the full regression model, gender, parent reports of hyperactivity, family variables (ineffective parenting, family violence, parent-child conflict, sibling conflict), peer variables (peer contact, deviant peers, peer conflict), and psychosocial variables (emotional problems, prosocial, academic) were entered both as main effects and as interactions with gender to predict the children's total aggression score (physical and indirect). The full regression model was significant with an adjusted R^2 of .16, $F = 18.83$, $df = 23, 2170$, $p = .0001$. The significant variables in the regression model included: hyperactivity, family violence, association with deviant peers, peer conflict, prosocial behaviour, and academic problems. Four variables interacted with gender indicating that they operated differently for girls and boys: parent-child conflict, sibling conflict, prosocial behaviour, and academic problems. The regression statistics are presented in Appendix C.

3.5.2 Predicting Parent's Reports of Aggression with Children's Reports

In the full regression model, children's reports of individual variables (gender, hyperactivity), family variables (parent-child conflict, sibling conflict), peer variables (peer contact, peer relations, deviant peers, peer conflict, victimization), and psychosocial variables (emotional problems, difficult behaviour, prosocial, academic) were entered both as main effects and as interactions with gender to predict the parents' reports of children's total aggression (physical and indirect). The full regression model was significant with an adjusted R^2 of .11, $F = 10.52$, $df = 27, 2034$, $p = .0001$. The significant variables in the regression model included: hyperactivity, parent-child conflict, peer relations, peer contact, deviant peers, victimization, difficult behaviours, and prosocial behaviour. All of these variables predicted similarly for girls and boys, as there were no interactions with gender. The regression statistics are presented in Appendix C.

The regression analyses indicated that 16% of the variance in children's reports of aggression could be explained by parent reports of the associated variables. Similarly 11% of the variance in parents' ratings of their children's aggression could be explained by the children's reports of the associated variables. Although these predictions across informants are statistically significant, they are somewhat modest. When the reports of the same respondent are used in the regression equations, the predictions of aggression are more substantial: 40% of the variance in parent-reports of their children's aggression can be predicted using the parent ratings of the biological,

social context, and psychosocial variables; 50% of the variance in child-reports of aggression can be predicted using the children's ratings of their own biological, social context, and psychosocial variables. There are limitations with the questionnaire data and with the perspectives of single respondents. In the following sections, we discuss each group of variables in relation to girls' and boys' aggression.

3.5.3 Hyperactivity as a Predictor of Aggression

Hyperactivity appeared as a significant positive predictor of both parent-rated aggression and child-rated aggression. For both regression models, hyperactivity/inattention operated similarly for girls and boys. Girls and boys who were scored high on hyperactivity/inattention were more likely to be rated as aggressive across informants. The similarity of this biological risk factor for both girls and boys is consistent with Moffitt's (1993) review of neuro-psychological risk factors associated with the development of aggression. These children's difficulties with impulsivity and attention likely interfere with their ability to focus in school and to function smoothly within their peer groups. Although many more boys experience difficulties of hyperactivity and inattention than girls, the girls who do experience these problems appear to be at similar risk for developing aggressive problems. Therefore, in assessing girls who are experiencing aggressive behaviour problems, special consideration should be given to their inattentiveness and other cognitive impairments, which Szatmari and his colleagues (1989) found to be the manifestations for girls. These indicators may be more difficult for parents and teachers to detect than the symptoms exhibited by boys such as disruptive behaviour and high activity levels (Szatmari, et al., 1989). Therefore, careful screenings and assessments may be required to identify girls who are experiencing this risk factor associated with the development of aggressive behaviour problems.

3.5.4 Family Variables as Predictors of Aggression

Several family variables were related to children's aggressive behaviour problems. There was a positive association between parents' reports of family violence and children's aggression, which operated similarly for girls and boys. This association is consistent with many studies that find marital conflict one of the most significant predictors of children's aggression (Davies & Cummings, 1994). Presumably, parents who cannot solve problems between themselves serve as models for their children, who may learn to use aggression as a means of resolving conflict.

Additionally, when children live in a home where parents are frequently in conflict, their emotional security is undermined which can, in turn, lead to the development of both aggressive and emotional difficulties (Davies & Cummings, 1994). The NLSCY data are important in highlighting the similar vulnerability of girls and boys to difficulties in the parenting relationship. This result is in contrast with some research suggesting that boys are at greater risk for problems than girls (e.g., Wolfe, Jaffe, Wilson, & Zak, 1985), but consistent with studies that find little difference, or a greater risk of family violence for girls than boys (e.g., Moore & Pepler, 1998). From the NLSCY data, it appears as if both girls and boys growing up in a home with family violence are at risk for developing aggressive behaviour problems.

Reports of conflicts between parents and their children were also positively associated with children's aggression. This prediction was similarly strong for girls and boys when children's reports of conflict with their parents was used to predict parent-rated aggression. Both girls and boys who reported high conflict with their parents were more likely to be rated by their parents as aggressive.

A different pattern emerged, however, in examining the parents' reports conflict with their children as a predictor for children's reports of aggression. Parent reports of conflictual relationships with their children related more strongly to girls' reports of aggression than to boys' reports. In other words, the higher girls rated themselves on aggression, the more likely their parents were to report conflicts with their daughters. The salience of parent-child conflict in families with aggressive girls is consistent with Kavanagh and Hops' (1994) observations of family problem solving interactions. They found that adolescent girls tended to be more aggressive with their parents than boys, even though parents' ratings of aggressive behaviour problems did not differ. In their observations, parent-child problem solving interactions were marked by reciprocity: Mothers interacting with daughters displayed less positive behaviour and tended to be more aggressive than mothers with sons. These data suggest that conflictual family interactions may comprise a context in which aggressive girls' behaviours are manifested and sustained.

We expected that sibling relationships would be another context in which girls' aggression is expressed. The sibling relationship differs from peer relationships in many ways that may increase the likelihood of girls being aggressive. The sibling relationship is enduring and cannot

be ruptured by a serious altercation. Therefore, within the intimacy of a sibling relationship, girls may be more inclined to express aggression and less likely to suffer for their transgressions of sex-role norms. To some extent, our hypothesis was confirmed: Parents' reports of aggressive girls' and boys' sibling conflicts were equally high and aggressive girls reported higher conflict with their siblings than nonaggressive girls and boys. The regression analyses indicated that the association of parent reports of sibling conflict was stronger for boys' reports of aggression than for girls' reports. For both boys and girls, there is a concern that tolerance for aggression within sibling interactions may lay the foundation for the use of aggression as a conflict strategy within intimate relationships (Pepler & Craig, 1998). As the NLSCY proceeds, the potential relations between conflict in the sibling relationship and conflict in other intimate relationships (e.g., romantic relationships) can be assessed.

3.5.5 Peer Variables as Predictors of Aggression

The data from these analyses of the NLSCY data confirm the role of the peer group in both girls' and boys' aggression (Parker & Asher, 1987; Reid, 1993). Peer difficulties were associated with aggression of both girls and boys as reported by parents and the children themselves. For both girls and boys, conflicts with peers and strained relations with peers predicted aggressive problems. There was also an association between children's reports of victimization and ratings of aggression: the more children reported that they were victimized, the higher were the parent reports of aggression. Although aggressive children are most often considered as the perpetrators of victimization, their experiences at the hands of peers are often very negative. The association between aggression and victimization is consistent with our observations of aggressive children on the playground: a substantial proportion of children who are aggressive are also the targets of aggression (Craig & Pepler, 1997). Therefore, the problems for aggressive children may be exacerbated by the behaviours of peers, who may often be aggressive and hostile in return. In this way the interactions within the peer group may become increasingly hostile and aggressive over time, potentially sustaining and increasing the problems experienced by aggressive children (Caspi et al., 1987).

The NLSCY data suggest another process whereby aggressive children's problems may increase. The report of associations with deviant peers was positively related to the aggressive problems of both boys and girls. The relation was somewhat stronger for boys for parent ratings: boys who

rated themselves as aggressive were more likely to have deviant peers according to parent ratings than girls. For both boys and girls, the negative interactions that aggressive children experience with their peers may gradually serve to isolate and marginalize the aggressors. Serbin and her colleagues (1993) found that girls rated by peers as aggressive were more disliked by their classmates and more isolated than aggressive boys. Our hypothesis that girls would experience more peer difficulties was not confirmed by the NLSCY data: Aggressive girls and boys experience similar difficulties within the peer group according to both parent and child reports. The discrepancy in these findings may relate to different informants: peers are often better informants regarding a child's social status than either parents or children themselves (Pepler & Craig, in press). Nevertheless, the data from the NLSCY indicate that experiences within the peer group, such as peer conflict, association with deviant peers, and victimization are important predictors of girls' and boys' aggression. Interactions with peers in middle childhood and early adolescence have the potential to both promote positive behaviours and, as seen with the present data, exacerbate the problems that aggressive girls and boys experience in their everyday lives.

3.5.6 Psychosocial Variables as Predictors of Aggression

The regression analyses confirmed the association between aggression and psychosocial difficulties. Girls' and boys' reports of prosocial and difficult behaviours were related to parents' reports of aggression. The less prosocial children rated themselves, the more likely their parents were to rate them as aggressive. Similarly, the more difficult behaviour a child reported, the more likely their parents were to rate them as aggressive. Children's ratings of their own aggression were also predicted by parents ratings of less prosocial behaviour and more academic problems. These two variables related to aggression somewhat differently for girls and boys. The relation between parent reports of prosocial behaviour and child-rated aggression was stronger for girls than for boys. In other words, girls who were rated by their parents as least prosocial were likely to rate themselves as most aggressive. Parent reports of academic problems were more strongly related to aggression for boys than for girls. The boys whose parents indicated high levels of academic problems were the boys who rated themselves as most aggressive. Patterson and his colleagues have described a developmental model of aggression in which the aggressive behaviours of boys create problems in both peer relations and academic performance (Patterson, DeBaryshe, & Ramsey, 1989). The data from the NLSCY suggest that this model may also be applicable to girls. Peer and academic problems are related to both girls' and boys'

aggression. Aggressive boys, however, may have more difficulties in school than aggressive girls. On the other hand, girls who lack prosocial skills may be at highest risk of developing aggressive behaviour problems. In general, girls were rated as more prosocial than boys. Girls who do not report helping others and sharing are out of step with other girls and may experience difficulties in their interactions within both the family and peer contexts.

4. Conclusion

The present analyses provide essential information on a currently understudied population, aggressive girls. For the analyses, highly aggressive and nonaggressive girls were identified using a combination of parent and self ratings. These girls were compared to similarly identified groups of boys to determine: the extent to which aggressive girls differ from nonaggressive girls, the similarities and differences between highly aggressive girls and boys, and the associations between the putative risk factors and girls' and boys' aggression scores. The theoretical foundation for the present analyses derived from a developmental model of risk in which biological, social context (family/peer), and psychosocial variables were considered in relation to girls' aggression.

The aggressive girls and boys in the NLSCY sample appear to face a number of adversities in hyperactivity/inattention and in both the family and peer contexts. Given these risks, we expected that aggressive girls would experience a variety of problems in the psychosocial domain. Robin's (1986) study of aggressive girls and boys indicated that girls not only exhibited externalizing problems, but also were more likely than boys to have emotional and other problems. The present analyses suggest that both aggressive girls and boys experience more emotional and self concept problems compared to nonaggressive children. The children's reports indicate that aggressive boys are more likely to engage in difficult behaviours than aggressive girls. Although the psychosocial profile for aggressive girls suggests difficulties across all variables compared to nonaggressive girls, their problems in this domain may not be as severe as those of aggressive boys. With the current analyses of Phase I of the NLSCY, it is not possible to determine whether the psychosocial difficulties are determinants or consequences of the aggressive behaviours. Subsequent analyses with the longitudinal data will shed light on the nature of these relations. For the aggressive girls, it will be important to examine whether they are at greater risk for emotional difficulties than nonaggressive girls and than aggressive boys in adolescence and beyond.

4.1 Limitations of the Analyses

The primary limitation of the analyses is that the data are cross-sectional, rather than longitudinal. Although the hypothesis and model testing provide excellent descriptive data on

factors related to girls' psychosocial adjustment, particularly related to aggression, they do not provide developmental or causal insights. They do, however, form an essential foundation for examining more complex questions related to the developmental processes associated with high levels of aggression in girls. In the future, longitudinal analyses can be employed to examine the processes related to the development, continuity, and change in the behaviour patterns of aggressive girls during childhood and adolescence.

A second limitation of the analyses is that data for some variables are only available from a single respondent, most often the parent (or person most knowledgeable about the child). Several decisions were made for the present analyses to address this limitation. First, the sample was limited to 10- and 11-year-old children for whom there were both parent and child reports. Secondly, the regression analyses were conducted across respondents to avoid the shared method variance in predicting aggression scores using independent variables rated by the same respondent.

Finally, the two-step sample selection strategy identified a sample of aggressive girls that may have been higher risk than the aggressive boys. In the first step of the sample selection, aggressive girls were selected with gender-specific criteria. In other words, girls were identified as aggressive relative to other girls their age rather than with criteria created across gender. This step might produce a somewhat diluted sample of girls (i.e., with a broader sample of girls and a more restricted sample of boys). The second step, however, more than counteracted that bias. Fewer aggressive girls than aggressive boys were identified when the top quarter of parent-rated and child-rated aggressive children were selected. There was less agreement on aggressive behaviours between parents and their daughters than between parents and their sons. One interpretation of this pattern is that parents may not be as aware of aggressive girls' problems as they are more covert than those of boys. Conversely, aggressive girls may be less likely to acknowledge their aggressive behaviours than boys. Whatever the underlying mechanism, this pattern suggests that the problems of aggressive girls may not come to the attention of parents, teachers, or the girls themselves. Therefore, there may be fewer referrals for support for aggressive girls compared to boys, especially during the early adolescent period.

4.2 Policy Implications

In this research paper, we have examined biological and social context risk factors and psychosocial difficulties associated with high levels of aggression in girls compared to boys. The NLSCY assessments included forms of physical aggression more commonly associated with boys' behaviours, as well as indirect forms of aggression more commonly associated with girls. In addition to the inclusive aggression items, it is clear that the aggressive girls have problems of similar severity to those of the aggressive boys. The aggressive girls score high on both physical and indirect aggression, and they experience a range of difficulties in their relationships within the home and school.

It appears as if the processes associated with the development of aggressive behaviour problems in the home and peer group are similar for girls and boys. Children who are aggressive tend to come from homes in which there is ineffective parenting, family violence, and strained interactions between the parents and children and among siblings. The patterns of difficulties in relationships appear to extend to the peer groups for aggressive girls and boys. With their peers, aggressive children experience higher levels of conflict and victimization; lower levels of contact and quality relations than their nonaggressive counterparts. According to the children's reports, the drift into deviant peer groups appears to be operating at similar levels for aggressive girls and boys. The disadvantages accruing for aggressive girls and boys appear not only in their relationships, but also in their psychosocial profiles. Both aggressive girls and boys suffer from higher levels of emotional, self concept, difficult behaviour, and academic problems compared to their nonaggressive peers.

Several key issues related to identification and intervention arise from these analyses of the NLSCY data on aggressive girls. For the most part, these recommendations also apply to aggressive boys.

- Girls with problems of hyperactivity/inattention should be identified early as this neuropsychological problem is associated with aggressive behaviour problems.
- Girls in families with family violence, ineffective parenting, and high levels of conflict should be identified for supportive interventions. In particular, parent-child conflict may be a significant factor to target in interventions with aggressive girls.

- The peer relations of aggressive girls are an area of concern. The data suggest that the interventions in the peer context should be systemic. Not only do aggressive girls require support in developing positive peer relations, but the peers of aggressive girls need to develop skills and an understanding to interact with aggressive children without exacerbating their problems through victimization.
- Assessments and interventions for aggressive girls must be multi-dimensional. In addition to experiencing problems with aggressive behaviours, the aggressive girls in the sample were experiencing problems in many other domains: emotional problems, self-concept, social skills, and academic performance.
- Although the prevalence of aggressive problems among girls is lower than that of boys, the NLSCY data suggest that similar factors relate to girls' and boys' aggression and that the problems of aggressive girls are in most respects as severe as those of boys. More basic and applied research is required to identify the developmental pathways of aggressive girls and effective intervention strategies to promote their healthy development.

In summary, the NLSCY data contribute substantially to the limited understanding of girls' aggression. With the perspective from a nationally representative sample, it is clear that we should not be ignoring the problems of aggressive girls. Although the social costs of girls' aggression are seldom reflected in crime statistics, they may be equally troubling. As these aggressive girls grow up, the social costs may become increasingly apparent when they enter intimate relationships and become mothers, themselves. The analyses of biological and social context risks and the psychosocial difficulties associated with girls' aggression provide direction for the early identification of girls at risk for aggressive behaviour problems and clear targets for intervention. By uncovering the correlates and problems experienced by aggressive girls, we can begin to plan effectively for the optimal development of Canadian girls, who hold the future in their hands, as the mothers of the next generation.

Appendix A

Questions for Aggression, Family, Peer and Psychosocial Variables

Biological Variables. Hyperactivity was determined from the parent and child ratings of eight behaviour problems (e.g., restless, fights, distractable, can't concentrate). These were scored as 0 (never or not true), 1 (sometimes or somewhat true) or 2 (often or very true).

Measures of puberty were obtained from the three questions for girls on the 10- to 11- year-olds' questionnaire relating to body hair, breast development, and menstruation.

Social Context Variables. Information on the family variables including family violence and ineffective parenting were derived from the parent reports from the Parent Questionnaire and Children's Questionnaire.

Family violence was assessed by the question asking how often does _____ see adults or teenagers in your house physically fighting, hitting, or otherwise trying to hurt others? The question was scored from 1 (often) to 4 (never).

Ineffective parenting was a summary score of seven questions. For example: How often do you think that the punishment you give ____ depends on your mood? How often do you feel you are having problems managing _____? Scored 1 (never) to 5 (all the time).

Data on parent-child conflict were derived from parent reports of relationships, as well as questions relating to conflict on the parenting questionnaire. Similar questions were drawn from the 10-11 year old questionnaire. An average of the child's two two questions for parents was used. The question asked "During the past 6 months, how well have you gotten along with your mother/father? It was scored from 1 (very well, no problems) to 5 (not well at all, constant problems).

Data on sibling conflict were obtained from parent ratings of relationships and from the children's reports of relationships. The question asked how well ____ has gotten along with his/her sibling in the past six months. It was scored from 1 (very well, no problems) to 5 (not well at all, constant problems).

Parent reports were used to assess peer conflict, peer contact, and associations with deviant peers. The peer conflict question was similar to the family conflict questions. It asked, "During the past 6 months, how well has _____ gotten along with other kids, such as friends or classmates. It was scored from 1 (very well, no problems) to 5 (not well at all, constant problems).

Two questions comprised the peer contact variable: About how many days a week does ____ do things with friends? Scored 1 (never) to 5 (6-7) days a week. About how many close friends does ____ have? Scored 1 (none) to 5 (6 or more).

Appendix A (Continued):

The child's report of peer relations was derived from three questions: I get along with kids easily; Other kids want me to be their friend; and Most other kids like me. These questions were scored from 1 (false) to 5 (true).

Deviant peers was assessed with a question that asked the child: In the past year, were you part of a group that did bad things, scored 1 (yes) or 2(no). Parents answered a similar question

Victimization was determined with six questions on the on the 10-11 year old questionnaire. These included being bullied on the way to and from school, feeling like an outsider at school, feeling safe at school, feeling safe on the way to and from school, children saying nasty and unpleasant things, and being bullied at school. These were scored from 1 (all the time) to 5 (never).

Psychosocial Variables. The data on emotional and academic problems were derived from parent reports, as well as from 10- and 11-year-old children's reports.

Parent and child reports of eight problems were summed for the emotional problems scale. These questions were of the form, How often would you say that ____: seems to be unhappy, sad or depressed? ; is not as happy as other children; is too fearful or anxious. The questions were scored 1 (never or not true) to 3 (often or very true).

Children's self concepts from the 10-11 year old questionnaire were assessed with eight questions including: In general, I like the way I am, I have a lot to be proud of, a lot of things about me are good, when I do something, I do it well, I am good looking, I have a pleasant looking face, other kids think I am good looking, I have a good looking body. These questions were scored from 0(false) to 4 (true).

Prosocial behaviour was assessed from parent and child reports. There were 10 questions on this scale assessing behaviours such as: offering to help other children who are having difficulty, volunteers to help clear up a mess someone else has made, and comforts a child who is crying or upset. These questions were scored 1 (never or not true) to 3 (often or very true).

Difficult behaviour was assessed with children's reports on five questions relating to staying out later than your parents said you should, staying out all night without permission, skipping a day of school without permission, getting drunk, being questioned by the police, and running away from home. These questions were scored from 1 (never) to 4 (more than twice).

The child's report of academic problems was derived from the question: How well do you think you are doing in your school work? It was scored from 1(very well) to 5 (very poorly). The parent question was similar, asking how the child is doing overall at school this year. It was also scored from 1(very well) to 5 (very poorly).

Aggression. Physical aggression was assessed from parent and child reports for 10-11 year olds. These questions include items such as: getting into fights, reacting with anger and fighting, physically attacking people, threatening, cruelty and bullying, kicking and biting. Indirect aggression was assessed with items such as: trying to get others to dislike someone, becoming friends with another as revenge, saying bad things behind someone's back, telling others to avoid being friends with someone, and telling someone's secrets to another. These items were scored from 1 (never or not true) to 3 (often or very true).

Appendix B

Correlations Among Parent- and Child-Rated Variables

Correlations Among Parent- and Child Ratings of Aggression and Ratings of Hyperactivity/ Inattention

Hyperactivity/ Inattention	Physical Aggression				Indirect Aggression			
	Girls		Boys		Girls		Boys	
	Parent Rating	Child Rating	Parent Rating	Child Rating	Parent Rating	Child Rating	Parent Rating	Child Rating
Parent Rating	.41	.23	.47	.28	.39	.14	.34	.16
Child Rating	.17	.53	.24	.57	.16	.42	.16	.43

Correlations Among Parent and Child Ratings of Aggression and Family Variables

	Physical Aggression				Indirect Aggression			
	Girls		Boys		Girls		Boys	
	Parent Rating	Child Rating	Parent Rating	Child Rating	Parent Rating	Child Rating	Parent Rating	Child Rating
Family Violence	-.12	-.11	-.17	-.15	-.10	-.12	-.12	-.04 (ns)
Ineffective Parenting	.44	.20	.44	.23	.35	.13	.32	.16
Parent-Child Conflict (Parent Rating)	.43	.24	.45	.19	.32	.12	.29	.13
Parent-Child Conflict (Child Rating)	.17	.34	.23	.29	.13	.25	.10	.19
Sibling Conflict (Parent Rating)	.36	.16	.38	.19	.31	.07*	.23	.09
Sibling Conflict (Child Rating)	.07*	.11	.11	.19	.07*	.08*	.07*	.20

Note: (ns) = nonsignificant; * p .05; all other correlations are significant at p .001.

Correlations Among Parent and Child Ratings of Aggression and Parent Ratings of Peer Variables

	Physical Aggression				Indirect Aggression			
	Girls		Boys		Girls		Boys	
	Parent Rating	Child Rating	Parent Rating	Child Rating	Parent Rating	Child Rating	Parent Rating	Child Rating
Peer Conflict	.34	.20	.42	.25	.31	.14	.31	.16
Peer Contacts	-.10	-.03(ns)	-.10	-.01(ns)	-.04(ns)	-.01(ns)	.01(ns)	-.03(ns)
Deviant Peers	.20	.12	.30	.18	.24	.05*	+.28	.18

Note: (ns) = nonsignificant; * p .05; all other correlations are significant at p .001.

A higher score on the deviant peer and victimization variables indicates fewer problems.

Correlations Among Parent and Child Ratings of Aggression and Child Ratings of Peer Variables

	Physical Aggression				Indirect Aggression			
	Girls		Boys		Girls		Boys	
	Parent Rating	Child Rating	Parent Rating	Child Rating	Parent Rating	Child Rating	Parent Rating	Child Rating
Peer Conflict	.17	.32	.24	.30	.15	.29	.12	.23
Peer Contacts	-.10	-.16	-.12	-.06*	-.04 (ns)	-.12	.02 (ns)	-.03 (ns)
Deviant Peers	.06*	.27	.13	.33	.11	.27	.11	.21
Peer Relations	-.21	-.32	-.27	-.27	-.13	-.21	-.14	-.21
Victimization	-.12	-.27	-.17	-.17	-.10	-.15	-.10	-.13

Note: (ns) = nonsignificant; * p .05; all other correlations are significant at p .001.

A higher score on the deviant peer and victimization variables indicates fewer problems.

Correlations Among Parent and Child Ratings of Aggression and Parent Ratings of Psychosocial Variables

	Physical Aggression				Indirect Aggression			
	Girls		Boys		Girls		Boys	
	Parent Rating	Child Rating	Parent Rating	Child Rating	Parent Rating	Child Rating	Parent Rating	Child Rating
Emotional	.45	.19	.45	.18	.34	.11	.34	.09
Prosocial	-.19	-.06*	-.22	-.22	-.16	.03(ns)	-.1	-.14
Academic Problems	.14	.20	.22	.29	.09	0.07*	.18	.19

Note: (ns) = nonsignificant; * p .05; all other correlations are significant at p .001.

Correlations Among Parent and Child Ratings of Aggression and Children's Ratings of Psychosocial Variables

Psychosocial Variables	Physical Aggression				Indirect Aggression			
	Girls		Boys		Girls		Boys	
	Parent	Child	Parent	Child	Parent	Child	Parent	Child
Emotional	.15	.47	.19	.46	.12	.32	.12	.35
Prosocial	-.12	-.23	-.16	-.30	-.11	-.25	-.08*	-.25
Difficult Behaviours	.08*	.31	.21	.46	.07*	.19	.13	.29
Academic Problems	.11	.28	.20	.29	.12	.18	.10	.16

Note: (ns) = nonsignificant; * p .05; all other correlations are significant at p .001.

Appendix C

Multiple Regression Analyses

Multiple Regression of Parent Variables Predicting Child Reports of Aggression

Predictors	R ² Change	B	SE _B	Beta	t	p
Hyperactivity	.05	.12	.03	.09	3.41	.0007
Family violence	.01	-.91	.19	-.09	-4.73	.0001
Gender x Parent-Child Conflict	.0005	.36	.16	.14	2.22	.03
Gender x Sibling Conflict	.002	-0.25	.12	-.13	-2.08	.04
Deviant Peers	.007	-.42	.13	.07	-3.23	.001
Peer Conflict	.006	.45	.14	.07	3.17	.002
Prosocial	.008	-.11	.03	-.08	-3.95	.0001
Gender x Prosocial	.004	.09	.03	.26	3.29	.001
Academic Problems	.02	.67	.11	.13	6.01	.0001
Gender x Academic Problems	.002	-.22	.11	-.09	-1.99	.05

Note: A higher score on the deviant peer variable indicates fewer problems.

Multiple Regression of Child Variables Predicting Parent Reports of Aggression

Predictors	R ² Change	B	SE _B	Beta	t	p
Hyperactivity	.01	.10	.03	.10	3.70	.0002
Parent-Child Conflict	.04	.32	.09	.08	3.59	.0003
Peer Conflict	.02	.22	.09	.06	2.42	.02
Peer Relations	.02	-.14	.04	-.11	-3.97	.0001
Peer Contact	.002	.09	.04	.05	2.04	.05
Deviant Peers	.007	-.55	.27	.05	-2.04	.05
Victimization	.004	-.08	.03	-.06	-2.72	.01
Difficult Behaviour	.01	.31	.10	.08	3.08	.003
Prosocial	.002	-0.04	.02	-.05	-1.99	.05

Note: A higher score on the deviant peer and victimization variables indicates fewer problems.

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