

Processes Underlying Children's Adjustment in Families Characterized by Physical Aggression*

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The hypothesis that physical aggression in the family affects children's adjustment through both observational learning/modeling and through its impact on parenting was tested (via LISREL) using data from a representative sample of Canadian children (N = 11,221). Results showed that observational learning and disrupted parenting provide reasonable, if only partial explanations, of mothers' assessments of children's adjustment in families characterized by physical aggression. Models for preschool (4–5 years), young (6–9 years), and older school-age (10–11 years) children fit acceptably and showed similar but weak effects. Children reported to witness more aggression also were reported to behave more aggressively. Mothers who reported being less warm and responsive in parenting reported that their children were more aggressive, had more internalizing behaviors, and had fewer prosocial behaviors.

The adverse outcomes for children exposed to physical aggression in their families have long been recognized. These children tend to exhibit patterns of maladjustment, including higher levels of externalizing behaviors (aggressiveness, noncompliance, disruptiveness), internalizing behaviors (anxiety, depression, social withdrawal), and lower levels of social competence than children not exposed to this behavior in their families (for reviews, see Kolbo, Blakely, & Engleman, 1996; Mohr, Noone Lutz, Fantuzzo, & Perry, 2000; Wolak & Finkelhor, 1998). These children are at risk for long-term behavioral and emotional difficulties and for repeating the aggressive dynamics in their own adult lives (Egeland, 1993).

Relative to our knowledge of the adverse outcomes for children, research has done little to elucidate the mechanisms that underlie the risk for these outcomes to provide an understanding of how children are actually affected by witnessing aggression (Davies & Cummings, 1994; Fauber & Long, 1991; Fincham, 1994; Fincham, Grych, & Osborne, 1994; Rutter, 1994). Further advances require that research focus more on understanding the specific mechanisms that explain the association between intrafamily aggression and children's adjustment. This information is needed both for scientific purposes and to inform policy, prevention, and treatment efforts.

Observational learning is one mechanism by which intrafamily aggression is thought to influence children's adjustment (Bandura, 1973). Social learning theory suggests that children learn aggressive behavior the same way they learn other kinds of behavior, namely by observation and imitation. This perspective proposes that children internalize the behavior they frequently witness in role models and incorporate it into their own repertoire of behavior. Numerous studies have shown that children exposed to both real aggression and laboratory simulations were

more aggressive than nonexposed children (Cummings, 1987; Cummings, Zahn-Waxler, & Radke-Yarrow, 1981; El-Sheikh & Cheskes, 1995; Wolak & Finkelhor, 1998). Children responded to simulated conflict between an adult and a child, as well as to conflict between two adults.

Although social learning theory has been relatively successful in explaining children's aggressive behavior, it has been less successful in explaining other problem behaviors exhibited by children exposed to aggression in their families. An alternate mechanism has been suggested to help explain the wider range of children's adjustment difficulties. Intrafamily aggression has been postulated to produce adverse effects in children because of the disruption to parenting that occurs in these families (Davies & Cummings, 1994; Fauber & Long, 1991; Rutter, 1994; Wolfe & Jaffe, 1991). Most theories of children's social and emotional development emphasize the salience of parenting (Rubin, Stewart, & Chen, 1995). Supportive, marital relationships and family environments are generally associated with warm, responsive, and involved parenting (Belsky, 1990; Erel & Burman, 1995). Parents consumed and overwhelmed with marital problems or family discord become less involved and less effective in parenting. A number of studies have shown that interparental conflict disrupts parenting (Conger et al., 1992, 1993; Harold & Conger, 1997; Krishnakumar & Buehler, 2000; Simons, Lorenz, Conger, & Wu, 1992). However, the few studies that examined the role of parenting in families characterized by aggression report inconsistent findings (Henning, Leitenberg, Coffey, Bennett, & Janowski, 1997; Jouriles, Murphy, & O'Leary, 1989; McCloskey, Figueredo, & Koss, 1995).

The purpose of this study was to test the hypothesis that exposure to physical aggression in the family affects children's adjustment through two mechanisms—observational learning/modeling and the disruption to parenting that results from the aggressive family dynamics. In addition to simultaneously examining these potential mechanisms by which intrafamily aggression might exert its influence on children, there are several other ways in which the present study differs from most previous studies on the impact of intrafamily aggression on children. First, this study is based on a large, representative sample of children. Most studies of children who witness intrafamily aggression have relied on convenience samples recruited from shelters for abused women (e.g., Jaffe, Wolfe, & Wilson, 1990; Markward, 1997; Mathias, Mertin, & Murray, 1995; Smith, Berthelsen, & O'Connor, 1997), from treatment programs for parents in marital therapy (e.g., Jouriles et al., 1989; Jouriles, Norwood, McDonald, Vincent, & Mahoney, 1996), or from treatment programs for children in therapy (e.g., Jouriles, Barling, & O'Leary,

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1987; Kolbo, 1996). These children cannot be assumed to represent all children exposed to aggression in their families.

Second, this study considers and controls for important stressors that tend to co-occur in violent homes when assessing the impact of intrafamily aggression on children's adjustment. Past research has rarely considered or controlled for stressors such as parental depression, alcoholism, single parenting, or low income (Grizenko & Pawliuk, 1994; Rutter, 1995) that have been shown to influence parenting (Conger et al., 1992, 1993; Goodman & Gotlib, 1999; Simons et al., 1992).

Third, this study examines the influence of intrafamily aggression on several aspects of children's adjustment including physical aggression, indirect aggression, internalizing behaviors, and prosocial behaviors. Past research has examined children's physical aggression but ignored more subtle and covert forms of aggression. Indirect aggression is a nonphysical form of aggression consisting of manipulative behavior designed to hurt another person (e.g., ignoring other children or excluding them from activities). Whereas past research has focused on the impact of intrafamily aggression on the development of negative child outcomes, this study also considers the impact on the development of positive or prosocial behaviors in children (e.g., helping other children).

Finally, this study examines the effects on these outcomes separately for children of different ages (i.e., 4- to 5-year-olds, 6- to 9-year-olds, and 10- to 11-year-olds). Past research has included children of different ages, but the small sample sizes usually precluded investigating age effects. Hence, little is known about developmental differences in children's adjustment.

Method

Sample

This study is based on data from the first wave of the National Longitudinal Survey of Children and Youth (NLSCY; Statistics Canada, 1997), a 20-year study of a representative sample of Canadian children living in the 10 provinces. In the first wave (1994–1995), 22,831 children ranging from newborn to 11 years participated (response rate = 86.3%). Parents provided the information for all the parent and child variables. We used four criteria to select children from the NLSCY database. First, children younger than 4 years were excluded because different outcomes were measured for these children. Second, children were excluded if their fathers were interviewed. Because the effects of parenting on children's adjustment may differ by the gender of the parent, we did not want to include both parents and obscure this information. We chose to study mothers rather than fathers because mothers were interviewed for the majority of the children (91.3%) and continue to be viewed as the primary caregivers (Collins, Harris, & Susman, 1995). Third, children living in foster care were excluded because of the short-term nature of these parent-child relationships. Finally, children with serious chronic medical problems were excluded to eliminate alternate explanations for adjustment difficulties. The sample was then divided into preschool children (4 to 5 years), young school-age children (6 to 9 years), and older school-age children (10 to 11 years), so these groups could be examined separately. A covariance matrix was created for each group using listwise deletion of cases with missing data. Data were weighted to better reflect the population of children living in the 10 provinces in Canada. There were 3,014 children in the preschool sample, 5,553 chil-

dren in the young school-age sample, and 2,654 children in the older school-age sample.

Model Specification

The theoretical model, shown in Figure 1 by solid lines, hypothesizes that intrafamily aggression influences children's adjustment through two mechanisms. The first pathway—*intrafamily aggression to child witnesses intrafamily aggression (Path A) and child witnesses intrafamily aggression to child's physical aggression (Path K) and indirect aggression (Path L)*—tests the observational learning/modeling hypothesis. That is, the model indicates that aggression in the family is linked to child adjustment through the child's witnessing the aggressive dynamics. We hypothesized that children who were reported to witness aggression, either by parents or older siblings, more frequently at home would behave more aggressively using both physical and indirect forms of aggression.

The second pathway—*intrafamily aggression to maternal responsiveness (Path B) and maternal responsiveness to various aspects of children's adjustment (Paths M to P)*—tests the disruption to parenting hypothesis. That is, the model indicates that the effect of intrafamily aggression on child adjustment operates through parenting. We hypothesized that intrafamily aggression, whether witnessed by the child or not, would disrupt the parent's (mother's) ability to parent responsively, and this, in turn, would influence various aspects of children's adjustment. We hypothesized that less maternal responsiveness would result in an increase in physical aggression, indirect aggression, and internalizing behaviors, as well as a decrease in prosocial behaviors in children.

A number of psychosocial and demographic variables, shown in previous research to influence parenting, were included as background control variables: maternal age, maternal education, maternal depression, maternal alcohol consumption, family income, family size, family structure, and family tension due to alcohol consumption (Paths C to J). These background variables were hypothesized to influence children's adjustment through their effect on parenting. Finally, gender was included because the outcomes were expected to vary for boys and girls; there are gender differences in these behaviors even for children in the general population (Campbell, 1995; Offord, Boyle, Fleming, Blum, & Grant, 1989). Hence, paths lead directly from child gender to children's adjustment (Paths Q to T). All background variables were permitted to covary, a strategy acknowledging that there may be links among these background variables. For example, intrafamily aggression is associated with maternal depression (Campbell, Kub, & Rose, 1996; Goodman & Gotlib, 1999), alcohol consumption (Barnett & Fagan, 1993; Gelles, 1993; Murphy & O'Farrell, 1994), and family size (Rutter, 1995). The model does not attempt to investigate these relationships, however, but only acknowledges their existence and controls for their effect on the intervening variables of the child's witnessing intrafamily aggression and parenting. The error terms associated with the four outcome measures also were permitted to covary. This strategy acknowledges that additional variables also may influence children's adjustment. This is likely to occur, particularly because we could not include a measure of paternal responsiveness.

The key claim embodied in and tested by the model is that there are two mechanisms through which intrafamily aggression affects children's adjustment, namely through observational learning (the child's witnessing aggression in the family) and

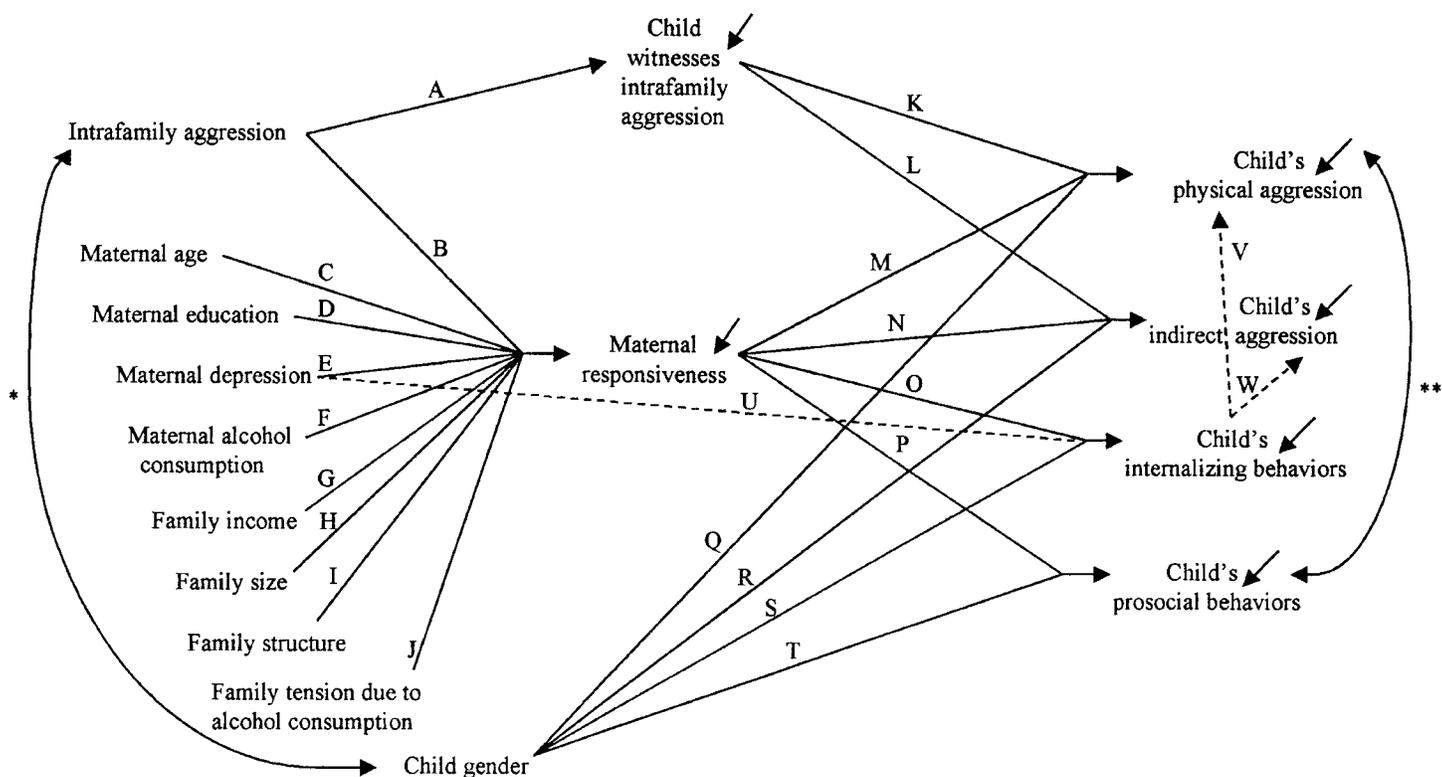


Figure 1. Processes Underlying Children's Adjustment in Families Characterized by Physical Aggression

Note: *All covariances permitted. **Covariances between error terms permitted. Hypothesized model shown by solid lines, revisions shown by broken lines.

through the disruption to parenting that occurs as a result of the adverse family dynamics. These mechanisms should account for all the effects that intrafamily aggression and the other background variables have on children's adjustment. If additional mechanisms are required, these would correspond to effects leading directly from the background variables to children's adjustment. Other than child gender, no such mechanisms were postulated, and with one exception, no such mechanisms were required to account for the findings reported below.

Indicators

The model, shown in Figure 1, includes 16 latent variables, each measured by a single indicator. The measures for the background variables (at the left of the model) were as follows. Maternal age was coded 1 (15 to 24 years), 2 (25 to 29 years), 3 (30 to 34 years), 4 (35 to 39 years), and 5 (40 years and over). Maternal education was coded 1 (less than high school), 2 (high school graduation), 3 (beyond high school), and 4 (college or university). Maternal depression was assessed using the Depression Scale, an abbreviated version of the Center for Epidemiological Studies Depression Scale (Radloff, 1977), which measures depressive symptoms in the general population. The scale consists of 12 statements inquiring how many days in the past week the person felt depressed, unhappy, or hopeless. Respondents use a 4-point scale (1 = rarely or none of the time to 4 = most or all of the time) to indicate their level of agreement with each item. In creating the total score for this scale and all other scales, one point was first subtracted from each item. Scores could range from 0 to 36, with higher scores indicating depressive symptoms. Internal consistency using Cronbach's al-

pha was .81, .82, and .84 for mothers of preschool, young school-age, and older school-age children, respectively.

We created a measure of maternal alcohol consumption from two survey items: During the past 12 months have you had a drink of beer, wine, liquor, or any other alcoholic beverage? and How often did you drink alcoholic beverages? Scores for the derived variable ranged from 0 (no drinking in the last 12 months) to 6 (every day). Family income was calculated from the total household income from all sources (e.g., wages, interest, unemployment insurance, etc.) divided by the number of persons in the household. Family income ranged from 1 (lowest) to 5 (highest). For example, families were classified as middle income (3) when the household income, in Canadian funds, was \$15,000 to \$29,999 for one or two persons, \$20,000 to \$39,999 for three to four persons, or \$30,000 to \$59,999 for five or more persons. Family size was the total number of children in the family. Family structure was coded 0 (two-parent) or 1 (one-parent). Family tension due to alcohol consumption was measured by mothers' responses to "Drinking is a source of tension or disagreement in our family." Responses ranged from 1 (strongly disagree) to 4 (strongly agree). Child gender was coded 0 (female) or 1 (male).

The two concepts in the middle of the model that represent the mechanistic functions were measured as follows: Child witnesses intrafamily aggression was measured by mothers' responses to the question "How often does the child see adults or teenagers in your house physically fighting, hitting, or otherwise trying to hurt others?" Responses ranged from 0 (never) to 3 (often). Maternal responsiveness was measured using a subscale of the Parenting Scale, an adaptation of the Parent Practices

Scale (Strayhorn & Weidman, 1988). The five-item subscale assesses responsiveness in parenting interactions (e.g., How often do you praise your child by saying something such as “good for you,” “what a nice thing you did,” or “that’s good going!”? Talk or play with each other, focusing attention on each other for 5 minutes or more, just for fun? Do something special with your child that he/she enjoys?). Scores on the 5-point scale (rated from 1 = *never* to 5 = *many times each day*) could range from 0 to 20, with higher scores indicating more responsive interactions. Cronbach’s alpha was .76, .73 and .72 for mothers of preschool, young school-age, and older school-age children, respectively.

All four child adjustment concepts (at the right of the model) were measured using various subscales of the Behavior Scale. Items in each subscale were scored on a 3-point scale (1 = *never or not true* to 3 = *often or very true*). Physical aggression was measured using six items (e.g., Gets into many fights? Physically attacks people? Kicks, bites, hits other children?). Scores could range from 0 to 12. This subscale is an index of behavioral pathology. Higher scores indicate more behavioral problems, but lower scores do not necessarily indicate more competence. Cronbach’s alpha was .75 for preschool children, .78 for young school-age children, and .75 for older school-age children.

Indirect aggression was measured using five items (e.g., When mad at someone, child tries to get others to dislike that person? Becomes friends with another as revenge? Says bad things behind the other’s back?). Scores in this subscale could range from 0 to 10, with high scores signifying behaviors indicative of indirect, nonphysical aggression. Cronbach’s alpha was .73, .79, and .79 for preschool, young school-age, and older school-age children, respectively.

Internalizing behaviors were measured using eight items (e.g., Child seems to be unhappy, sad, or depressed? Cries a lot? Appears miserable, unhappy, tearful, or distressed?). This subscale also is an index of behavioral pathology. Scores can range from 0 to 16, with higher scores indicating the presence of behaviors associated with anxiety and emotional disorders. Cronbach’s alpha was .72 for preschool children, .78 for young school-age children, and .82 for older school-age children.

Prosocial behaviors were measured using a 10-item subscale (e.g., Child will try to help someone who has been hurt? Comforts a child who is crying or upset? Helps other children who are feeling sick?). Scores can range from 0 to 20, with higher scores indicating social concern and competence. Cronbach’s alpha was .83, .82, and .80 for preschool, young school-age, and older school-age children, respectively.

Intrafamily aggression was not directly measured, but sufficient information for model estimation and testing was derived from the parent’s reports of how frequently their children saw adults or teenagers physically fighting, hitting, or otherwise trying to hurt other family members. How frequently a child witnesses intrafamily aggression is related to the actual frequency of aggression occurring in the family (Wolak & Finkelhor, 1998), but these variables will differ because the child may not witness all incidents. If the child witnesses some fraction of the actual instance of aggression, the actual amount of intrafamily aggression can be thought of as causally preceding the child’s witnessing. The distinction between these variables is important because it is the amount of actual, not child-witnessed, aggression that disrupts parenting. Parenting is altered because the actual aggression occurring in the family creates an environment that is not conducive to optimal parenting, not because the child nec-

essarily observes the aggression. Consequently, an unmeasured latent variable intrafamily aggression precedes child witnesses intrafamily aggression in the model to allow meaningful interpretation of the estimates. Hayduk (1987, 1996) has discussed procedures for dealing with unmeasured latent variables. In these analyses, the statistical identification of the intrafamily aggression latent variable was accomplished by setting to 1.0 (standardized estimate = .84) the structural coefficient leading from intrafamily aggression to child witnesses intrafamily aggression (Path A) and setting the variance of actual intrafamily aggression to account for approximately 70% of the variance in child witnesses intrafamily aggression. This asserts that 30% of the variance in witnessed aggression is unexplained by the actual amount of aggression occurring in the family and is arising from whatever family circumstances shield children from, or allow children to, witness the aggression that is occurring in the family. The model estimates would have been biased by misspecification if the unmeasured latent variable had not been used, but the model results were relatively insensitive to the 70 to 30% variance specification. Using 80 to 20% or 60 to 40% produced no substantial change in the results.

Scaling and Measurement Error

Each concept was scaled by specifying a value of 1.0 linking that concept to its respective indicator. This strategy makes the measurement scale for the underlying concept match the measurement scale of the corresponding indicator (Hayduk, 1987). Each indicator was assigned a fixed measurement error variance to adjust for inevitable coding errors, question clarity, and any gap between the meaning of the underlying latent concept and its corresponding indicator (Hayduk, 1987, 1996). The proportion of error variance was usually small because data-entry errors ought to be minimal given the care with which Statistics Canada gathered the data and given that our conceptualization of the concept closely matched the indicator. The specified proportion of error was determined differently depending on whether the concept was measured using a scale or a single questionnaire item. When the indicator was a scale, error variance was calculated based on the reliability estimate (i.e., $\text{error} = 1 - \alpha$). The error variance for the single item indicators was determined as follows: Maternal age was assigned 5% error variance to account for within-category variation. Maternal education was assigned only 1% error variance. Because this variable was derived from six questions about the respondent’s level of education, the possibility of a credential not fitting into a coding scheme was minimized. The error term for maternal alcohol consumption was fixed at 5% because this variable is susceptible to social desirability. Family income was assigned a modest 5% error variance because individuals likely report their income more accurately in federal government surveys than in other surveys. In addition, respondents were asked about all potential income sources (e.g., workers’ compensation, unemployment insurance, social assistance, etc.), not only income from wages and salaries. Family size was assigned 3% error variance to adjust for a few cases that were underestimated because the indicator was capped at four in the data file to safeguard families’ identity. Family structure was assigned a small amount of error (0.5%) because only individuals in transition from one- to two-parent families or vice versa should have dubious self-assignments. Family tension due to alcohol consumption was assigned 5% error variance to account for social desirability. A small error variance (0.5%) was assigned to child gender to account for the occasional data-entry

error. Finally, child witnesses intrafamily aggression was assigned 10% error variance because of the sensitivity of the question and the likelihood that some people underreport this type of behavior (Finkelhor, 1993). For a more detailed discussion of measurement issues, the reader is referred to Onyskiw (1999).

Data Analysis

We used structural equation modeling (LISREL 7.2; Jöreskog & Sörbom, 1989) to examine the hypothesized model. Maximum likelihood estimation was used to estimate the structural coefficients as well as to test the adequacy of the model. A small, insignificant chi-square (χ^2) generally indicates a good fit, but this is difficult to achieve with a large sample size because a chi-square test will detect even minute differences between the hypothesized model and the data (Bollen & Long, 1993; Browne & Cudeck, 1993; Hayduk, 1987, 1996). Consequently, we also considered two other indices of fit that are relatively unaffected by sample size (Jöreskog, 1993), the goodness-of-fit index (GFI) and the adjusted goodness-of-fit index (AGFI). These indices range from 0 to 1, with higher values indicating a better fitting model. A GFI or AGFI greater than 0.96 indicates a good fit (Hayduk, 1987, 1996). Structural coefficients were tested with a one-tailed *t* test when the direction of effects had been predicted; otherwise, two-tailed tests were used.

Results

Table 1 reports the demographic characteristics of the three groups. There are approximately equal numbers of boys and girls in each sample. The vast majority of children live in two-parent families, in families with incomes classified as middle or upper-middle income, and with mothers who have at least a high school education. There is no information available on the children's ethnicity because Statistics Canada suppressed this variable to protect anonymity.

Table 2 contains an outline of the child adjustment measures. As expected, the majority of children have low scores for physical and indirect aggression and internalizing behaviors but high scores for prosocial behaviors.

Testing the Model

Estimating the hypothesized model for the preschool sample resulted in a significantly ill fit, $\chi^2 (35, N = 3,014) = 446, p < .001$, but the other indices of fit (GFI = .981; AGFI = .936) suggested that it would be reasonable to pursue model modification. The modification indices and standardized residuals revealed several problems, most notably the need for a direct path between maternal depression and children's internalizing behaviors. The effect of maternal depression on children's adjustment mediated by parenting was insufficient to account for the covariances. When a direct path was included (Path U), the model improved substantially, $\chi^2 (34, N = 3,014) = 289, p < .001$. The GFI of .988 and the AGFI of .956 indicated that the model was approaching an acceptable fit, but there were still signs in the diagnostic information in the output that further modifications were required to improve the fit of the model.

The modification indices suggested that effects from children's internalizing behaviors on physical and indirect aggression would further improve model fit. Including these effects, however, produced an estimation problem (a borderline collinearity problem between these effects and the covariances connecting the errors on the corresponding latent concepts) that made it

Table 1
Demographic Characteristics of the Preschool, Young School-Age, and Older School-Age Children

	Preschool Children (<i>N</i> = 3,014) % of Sample	Young School-Age Children (<i>N</i> = 5,553) % of Sample	Older School-Age Children (<i>N</i> = 2,654) % of Sample
Child age			
4 years	54.0		
5 years	46.0		
6 years		24.9	
7 years		25.5	
8 years		25.2	
9 years		24.4	
10 years			52.5
11 years			47.5
Child gender			
Boys	50.5	50.3	50.5
Mother's age			
15–24 years	4.4	0.7 ^a	0.0
25–29 years	19.6	10.1	3.5
30–34 years	38.3	31.3	23.4
35–39 years	27.6	37.2	40.8
40 and over	10.1	20.6	32.3
Mother's education			
Less than high school	14.4	16.2	17.6
Graduated high school	19.1	19.9	18.6
Beyond high school	28.6	29.7	27.4
College or university	37.9	34.1	36.3
Family structure			
Two parent	85.0	85.3	84.4
Family size			
One child	14.4	11.2	10.7
Two children	52.5	49.3	49.5
Three children	24.0	27.0	27.7
Four or more children	9.0	12.5	12.2
Family income ^b			
Lowest	3.0	1.9	1.6 ^a
Lower middle	15.5	15.0	13.5
Middle	32.9	33.3	33.2
Upper middle	35.0	33.9	35.2
Highest	13.7	15.8	16.5

Note: Percentages in table may not add to 100 because of rounding.

^aEstimates are less reliable because of high sampling variability. ^bFor example, families are classified as middle income when the household income, in Canadian dollars, is \$15,000 to \$29,999 for one or two persons, \$20,000 to \$39,999 for three to four persons, or \$30,000 to \$59,999 for five or more persons.

Table 2
Child Adjustment Measures

	Preschool Children		Young School-Age Children		Older School-Age Children	
	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)
Physical aggression	1.56	(1.92)	1.33	(1.87)	1.19	(1.73)
Indirect aggression	0.78	(1.34)	1.31	(1.77)	1.38	(1.76)
Internalizing behaviors	2.06	(2.16)	2.58	(2.57)	2.87	(2.78)
Prosocial behaviors	11.23	(4.06)	12.68	(3.78)	13.26	(3.55)

impossible to obtain unique estimates of both the effects and the covariances. After careful consideration and a review of the basis for including error covariances, we decided to delete the covariances between the two corresponding error variances and follow the diagnostics by adding the two direct effects (Paths V and W). This strategy was warranted in retrospect because the data for the two older groups demanded precisely the same changes. These changes resulted in a modest model improvement. There were still detectable differences between the data

Table 3
Maximum Likelihood Estimates for Effects in the Modified Models

Effect	Preschool Children		Young School-Age Children		Older School-Age Children	
	Standardized Estimates	Explained Variance	Standardized Estimates	Explained Variance	Standardized Estimates	Explained Variance
Child witnesses intrafamily aggression		69.9%		69.7%		69.9%
(A) Intrafamily aggression	0.84 ^a		0.84 ^a		0.84 ^a	
Maternal responsiveness		7.9%		8.4%		9.2%
(B) Intrafamily aggression	-0.08**		-0.07***		-0.04	
(C) Maternal age	-0.02		-0.08***		-0.07**	
(D) Maternal education	0.07***		0.08***		0.07**	
(E) Maternal depression	-0.20***		-0.12***		-0.04	
(F) Maternal alcohol consumption	-0.03		-0.06***		-0.10***	
(G) Family income	-0.09**		-0.01		0.00	
(H) Family size	-0.11***		-0.18***		-0.22***	
(I) Family structure	-0.03		-0.01		-0.12***	
(J) Family tension due to alcohol consumption	-0.07**		-0.11***		-0.11***	
Physical aggression		25.5%		32.9%		33.6%
(K) Child witnesses intrafamily aggression	0.11***		0.08***		0.16***	
(M) Maternal responsiveness	-0.03		-0.04*		-0.08***	
(Q) Child gender	0.12***		0.18***		0.16***	
(V) Internalizing behaviors	0.47***		0.52***		0.51***	
Indirect aggression		15.1%		20.4%		26.9%
(L) Child witnesses intrafamily aggression	0.07***		0.06***		-0.01	
(N) Maternal responsiveness	-0.08**		-0.10***		-0.07**	
(R) Child gender	-0.04*		-0.08***		-0.06**	
(W) Internalizing behaviors	0.35***		0.41***		0.50***	
Internalizing behaviors		16.9%		15.0%		17.4%
(O) Maternal responsiveness	-0.10***		-0.11***		-0.16***	
(S) Child gender	-0.01		0.01		-0.03	
(U) Maternal depression	0.38***		0.36***		0.37***	
Prosocial behaviors		12.6%		18.9%		17.7%
(P) Maternal responsiveness	0.31***		0.37***		0.37***	
(T) Child gender	-0.18***		-0.22***		-0.20***	
Sample size		3,014		5,553		2,654
Chi square		193 (<i>df</i> = 34, <i>p</i> < .001)		327 (<i>df</i> = 34, <i>p</i> < .001)		193 (<i>df</i> = 34, <i>p</i> < .001)
GFI		.992		.992		.990
AGFI		.970		.973		.966

Note: Letters in parentheses in first column represent paths indicated in Figure 1. GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index.

^aCoefficient fixed.

p* < .05. *p* < .01. ****p* < .001.

and the model's implied covariances, $\chi^2(34, N = 3,014) = 193$, $p < .001$, but the other indices of fit (GFI = .992; AGFI = .970) showed that the degree of ill fit was not large; therefore, no further revisions were made to the model. The modifications to the model are represented by dashed lines in Figure 1.

The estimation process was repeated with the young and older school-age samples. The same modifications that had been required for the preschool children also were needed for both these models. Thus, the modifications made to the models did not appear to be following mere chance sampling fluctuations. Overall, the three groups were not as different as we had anticipated, and the general consistency in the signs and magnitudes of the estimates (including the prompted model revisions) are reassuring. The standardized structural estimates are presented in Table 3. The letter assigned to each path in Figure 1 can be used to locate the corresponding estimates in Table 3. The majority of the standardized estimates in all the models are statistically significant, although they are only weak to modest in strength.

Interpreting the Model

The models for the preschool, young, and older school-age children all fit the data acceptably well and showed that the observational learning/modeling and the disrupted parenting perspectives provide reasonable, if only partial, explanations of how children are affected when they live in families characterized by

physical aggression. There was considerable similarity among the three groups in terms of the percentage of explained variance and in the strength and significance of the structural coefficients. The consistency between the models provides some evidence of the robustness of the findings and supports a more detailed examination of the effects to understand how family and parental variables contribute to children's adjustment.

All the background variables together, including intrafamily aggression, explained less than 10% of the variance in maternal responsiveness; therefore, although several of the background variables influence parenting, the estimates are all weak. The models explained a modest portion of the variance in children's adjustment: 25.5% to 33.6% of the variance in physical aggression, 15.1% to 26.9% in indirect aggression, 15.0% to 17.4% in internalizing behaviors, and 12.6% to 18.9% in prosocial behaviors for children in all age groups. The model for the older school-age children had the greatest explanatory power, indicating that some of the estimates are stronger in this group than in the younger groups.

Support for the Observational Learning/Modeling and Disruption of Parenting Hypotheses

The estimates suggest that family member's use of physical aggression has a small but significant impact on children's adjustment through both the hypothesized mechanisms. Across all

the age groups, children who were reported to have witnessed aggression more frequently were also reported to behave significantly more aggressively, though the effect was weak (Path K). Witnessing aggression also weakly increased the use of indirect aggression for preschool children and young school-age children (Path L). Although we find evidence that observational learning/modeling affects children's physical and indirect aggression in five of the six instances, the magnitude of these effects are small.

The effect of witnessing aggression on older school-age children's use of indirect aggression was not significant. Why the effect declines to insignificance is not entirely clear. Older children use slightly more indirect aggression than younger children (Table 2), which is expected because these behaviors require greater social skills, but the use of indirect aggression is not influenced by the child's witnessing intrafamily aggression. There is no past research to help us explain this finding. This particular outcome has not been studied in children exposed to aggression in their families. Whatever the reason for this age difference, the specific mechanisms that might account for it will need to be examined in future research.

The hypothesis that intrafamily aggression influences children's adjustment via the disruption of parenting produces similar results. Aggression in the family resulted in small but statistically detectable decreases in maternal responsiveness for mothers of preschool and young school-age children, but the effect was not statistically significant for mothers of the older children. The decline in the estimates (Path B) suggests that aggression in the family becomes less disruptive to parenting older children.

Less maternal responsiveness was associated with small but statistically detectable increases in children's use of physical aggression (Path M) for the young and older school-age children, although not for preschool children. Maternal responsiveness significantly influenced aspects of children's adjustment other than children's use of physical aggression. Less maternal responsiveness resulted in small but significant increases in children's indirect aggression (Path N) and internalizing behaviors (Path O), as well as a modest decrease in prosocial behaviors (Path P). Thus, less maternal responsiveness not only translated into an increase in maladaptive behaviors in children, but it also translated into a decrease in behaviors that are generally associated with competence in children.

The impact of maternal responsiveness on children's adjustment remains significant after implicitly controlling for several psychosocial and demographic variables shown in previous research to influence parenting. We believe that this finding is clinically relevant. Only maternal depression seems to demand an alternate mechanism, in addition to parenting, to link it with children's internalizing behaviors. Had the parenting variable not been included in the model, all of the background variables that influenced parenting would have displayed effects leading directly to children's adjustment.

Our initial model included only a path from maternal depression to parenting, and thus asserted that parenting was the sole mechanism through which maternal depression would influence children. In hindsight, our modeling of the effect of maternal depression on children solely mediated by parenting ignored other potential mechanisms whereby maternal depression could influence children, such as inheriting the disposition for depression or the modeling of negative cognitions, behaviors, or affect (Cohler, Stott, & Musick, 1995; Goodman & Gotlib, 1999). Clearly, the inclusion of a direct path between maternal

depression and children's internalizing behaviors substantially improved the fit of all the models. Thus, in addition to the indirect effect of maternal depression on children's adjustment mediated through parenting, maternal depression directly contributes to children's internalizing behaviors, suggesting that there are multiple mechanisms of transmission. Children who lived with mothers who experienced more symptoms of depression were reported to be more anxious, sad, withdrawn, and depressed. Across all the age groups, the direct effect of maternal depression on children's internalizing behaviors was stronger than the effect mediated through parenting. In fact, the indirect effect of maternal depression on children's internalizing behaviors operating through parenting was not even significant for the oldest children (10 to 11 years old) because the path from maternal depression to parenting was not significant in this group. For these children, the only significant effect was the direct effect of depression on children's internalizing behaviors.

The strongest estimates in all three groups are the effects of internalizing behaviors on the child's use of physical and indirect aggression. These effects (Paths V and W in Figure 1) arose as data-prompted revisions to the models, and these effects operate within the child themselves. That is, these effects are the child's internal state influencing his or her external behavior. Children who are more sad, withdrawn, anxious, and depressed behave more aggressively, using both physical and indirect aggression. These effects contribute most of the explained variance in physical and indirect aggression, but it is important to note that both maternal responsiveness and depression contributed to children's internalizing behaviors and, thus, these variables indirectly influenced children's aggression.

The Role of Gender in Children's Adjustment

Boys used more physical aggression, less indirect aggression, and less prosocial behavior than girls across the age groups. There were no gender differences in internalizing behaviors. These findings are consistent with research on preschool and school-aged children in the general population (Björkqvist, 1994; Grotjeter & Crick, 1996; Campbell, 1995; Offord et al., 1989) and may be explained by socialization practices. Typically, aggressive behavior is encouraged in boys but discouraged in girls (Keenan & Shaw, 1997; Lytton & Romney, 1991; Miedzian, 1995). Girls are more likely to be socialized to treat others gently, to help others, to share belongings, and to take another's perspective. Parents also are more likely to respond positively when their daughters demonstrate these behaviors.

Whatever mechanisms explain these effects, they must not involve the background variables controlled in this study. That is, these gender differences were noted after controlling for intrafamily aggression and maternal responsiveness and all the psychosocial and demographic variables. If these factors were the source of the gender differences, we would have expected null effects of gender owing to the implicit control of these variables within the models.

Discussion and Implications

Overall, the models demonstrate that intrafamily aggression does influence children's adjustment, and the postulated mechanisms of observational learning/modeling and disrupted parenting both appear to be involved. Witnessing aggression increases children's use of physical and indirect aggression, and these are separate from the effect of intrafamily aggression that functions

through the disruption of parenting (maternal responsiveness). Maternal responsiveness is reduced by intrafamily aggression when children are younger than 10 years of age. Maternal responsiveness is also influenced by several individual factors (e.g., maternal age, education, depression, and alcohol consumption) and family factors (e.g., income, number of children in the family, single parenting, and family tension). These effects are not particularly strong, and several only attain significance for some groups of children. However, the effects of maternal education, the number of children in the family, and family tension on maternal responsiveness were significant for children in all age groups.

Intrafamily aggression is associated with an increase in children's use of physical aggression, indirect aggression, and internalizing behaviors, and a decrease in their use of prosocial behaviors. Even though the magnitude of most estimates is small, the consistency among the models provides some evidence of the robustness of the findings. Indeed, raising awareness of the multiple links between aggression in families and children's adjustment should be emphasized in prevention efforts. Parents may not be aware of the breadth of influences the aggressive family dynamics has on their children. An appreciation of the multiple and diverse adverse effects on children may be motivational because concerns for the safety and well-being of children are often the impetus for parents to change negative behavior or to leave violent partners (Erickson & Henderson, 1998; Hilton, 1992; Humphreys, 1998). Providing information about how children are affected when they live in families characterized by aggression may help parents in their decision-making process.

The fact that both observational learning/modeling and parenting linked intrafamily aggression to child outcomes in all these age groups has several implications. First, parents need to know that they cannot ultimately protect their children from negative sequelae merely by protecting them from direct exposure to the aggression (Erel & Burman, 1995). Protecting children from witnessing the aggression might mitigate learning aggressive behavior, but children will still be adversely affected because of the deterioration in maternal responsiveness that occurs.

Second, early intervention, occurring possibly even before preschool, is needed to avoid the detrimental outcomes for children exposed to physical aggression in their families. Third, the results of this study also reinforce the need for a comprehensive, family-centered approach because the behaviors of mothers and other family members clearly influence children's behaviors. Furthermore, interventions that increase maternal responsiveness and decrease maternal depression hold some promise for reducing children's adjustment difficulties. These maternal factors contributed directly to several aspects of children's adjustment and indirectly by contributing to internalizing behaviors, which, in turn, contributed to an increase in children's use of both forms of aggression. Professionals need to explore the underlying reason for the decreased maternal responsiveness and depression. The processes that are most likely to safeguard children from the negative impact of maternal depression and less responsive parenting may well be the same factors that protect women from developing depressive symptoms and from disrupting their parenting practices in the first place (i.e., eliminating aggression in families). Providing counseling and support to women and enhancing strategies to improve parenting skills or alleviate symptoms of depression are warranted. Ideally, of course, preventing

this type of behavior in families is preferable to merely mitigating its effect by encouraging optimal parenting.

Any assessment of children's behavior problems would not be complete without screening for the possibility of aggression in the family and depressive symptoms in the mother because these are contributing factors in children's problems. Simply providing mothers with strategies to deal with children's behavior problems without a comprehensive assessment may be counterproductive in situations in which family violence is present, and this risk factor was not accurately assessed.

This study found that children who are displaying internalizing behaviors are prone to behaving more aggressively. Acting out behaviors may mask the anxiety or emotional problems underlying some children's aggression and hinder parents' and clinicians' recognition of these problems (Jouriles & Norwood, 1995; Rubin & Mills, 1991). Externalizing behaviors are far more visible and demand more attention. We encourage practitioners to suspect internalizing behaviors in aggressive children—in both boys and girls—even when they are young. Although it is not commonly expected that young children will have these symptoms, mothers of preschoolers in this study reported internalizing behaviors in their children.

In summary, this analysis found support that both observational learning and disrupted parenting practices link intrafamily aggression to children's adjustment. The effects are not strong, but the fit of the models implies that these explanations are reasonable for understanding children's adjustment in families characterized by aggression.

Limitations and Future Research

Some limitations of the study warrant discussion. There were certain constraints imposed by using an existing data set. For instance, there was no information on the intensity of the aggression witnessed, the recency of these events, other forms of aggression witnessed (e.g., verbal), or to whom the aggression was specifically directed, all important parameters that can affect how children respond (Wolak & Finkelhor, 1998). In particular, the inability to determine if there was parent-child aggression is an important limitation because it can potentially confound these findings. Although most evidence suggests that witnessing aggression still influences child adjustment even when parent-child aggression is controlled through sampling efforts or statistical analyses (Fantuzzo et al., 1991; O'Keefe, 1994; Salzinger, Feldman, Hammer, & Rosario, 1992), future investigations should identify and control for this variable to examine the varying impact of these critical experiences on children's adjustment.

Because either the mother or father was interviewed, we were not able to examine the influence of both parents' parenting. Future research should examine the father's role in influencing child adjustment, especially in relation to externalizing behaviors because men typically exhibit more externalizing behaviors than do women (Rothbaum & Weisz, 1994).

The data used in these analyses relied on maternal reports of both parent and child variables. Mothers may have had difficulty recalling the amount of aggression their children witnessed or their own behaviors (e.g., parenting, depression, alcohol consumption). They may have responded in a biased or in a socially desirable manner (self-report data is more susceptible to social desirability than other methods of assessment).

Finally, as is traditional in causal analysis, the placement both of the effects and the absence of effects in the model were specified a priori. Although our assertions were based on careful

assessment of past research and theory, caution should still be used in interpreting the results. The model was tested using data from the first wave of the longitudinal survey, which is cross-sectional. In future waves, we will be able to obtain measures of these phenomena in a time order consistent with our theoretical predictions.

When interpreting the findings, we have tended to use language that adults' behavior affects children. Although parents and the family environment probably exert more substantial effects on children than children have on parents, children's behavior may sometimes discourage parents' efforts to be warm and responsive (Rothbaum & Weisz, 1994). The diagnostics of the current analyses did suggest that children's aggression might have a small effect on parenting. This modification was not included because other modifications were diagnostically clearer, and too many modifications would have compromised the model tests.

Despite these limitations, the study contributes to the literature by providing empirical evidence on the validity of two mechanisms thought to explain the association between intrafamily aggression and children's adjustment while controlling for the effects of several potential confounding variables. Furthermore, the use of a large, representative sample of children, the examination of both positive and negative child outcomes, and the separate analysis for children of different ages represent methodological improvements over past research in this area. The results lend support to the view that children are adversely affected by witnessing aggression and that parenting affects how children respond to living with this adversity and also suggest several areas that may be key points for interventions to reduce the risk to children.

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