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**Developmental antecedents of interpartner violence in a New  
Zealand birth cohort**

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## Abstract

This paper examines the developmental antecedents of interpartner violence (IPV) victimization and perpetration in a New Zealand birth cohort ( $n = 828$ ). The study found: (a) IPV occurred in 70% of relationships, with conflict ranging from minor psychological abuse to severe assault; (b) men and women reported similar experiences of victimization and perpetration of IPV; (c) exposure to abuse in childhood, family dysfunction and adversity, childhood and adolescent conduct problems, and alcohol abuse/dependence were significant predictors of IPV victimization and perpetration at age 25; and (d) the antecedents of IPV were largely the same for males and females, although the specific effects of these risk factors differed according to gender. Conduct disorder was more strongly predictive of IPV for females, whereas childhood abuse was more strongly predictive of IPV for males.

Keywords: Interpartner violence, gender differences, longitudinal studies, conduct disorder, abuse exposure

Over the last two decades there has been increasing research into the issue of interpartner violence (IPV), with much of this research focussing on issues of prevalence and gender differences. The accumulated findings from this research suggest that IPV is a relatively common occurrence (Coker et al., 2002; Straus, Gelles, & Steinmetz, 1980), that both males and females may be perpetrators and victims (Archer, 2000, , 2002; Carbone-Lopez, Kruttschnitt, & Macmillan, 2006; Fergusson, Horwood, & Ridder, 2005a; Magdol et al., 1997); but that females are over-represented as victims in severe incidents of violence involving injury or death (Cantos, Neidig, & O'Leary, 1994; Carbone-Lopez et al., 2006; Stets & Straus, 1990; Whitaker, Haileyesus, Swahn, & Saltzman, 2007).

Parallel to research into the prevalence of IPV, there have been ongoing debates about the role of various risk factors in predisposing individuals to engage in family violence (for reviews see: Emery & Billings-Laumann, 1998; Gortner, Gollan, & Jacobson, 1997; Jewkes, 2002; Straus, 1980; Tolan, Gorman-Smith, & Henry, 2006). One theme in this debate has focussed on the role of developmental processes in predisposing individuals to engage in IPV. Specifically, it has been suggested that a series of childhood and family factors may act to increase risks that individuals will go on later to abuse their partners. These factors include exposure to child abuse, witnessing interparental violence as a child, a history of childhood and adolescent conduct disorder and violent behavior, and other factors such as family dysfunction and economic disadvantage, and substance abuse/dependence and mental health issues.

#### *Exposure to child abuse and witnessing interparental violence*

A number of studies have suggested that exposure to child physical and sexual abuse may increase the risk that an individual will behave violently toward an intimate partner in adulthood. For example, Simons and colleagues (Simons, Lin, & Gordon, 1998), using prospective data, found that frequent exposure to corporal punishment in childhood was associated with increased risk of violence against dating partners in a prospective sample of boys. Also, Lavoie et al. (Lavoie et al.,

2002), also using prospective data, found that harsh parenting practices, including the use of severe or abusive corporal punishment, predicted dating violence in a longitudinal sample of low-socioeconomic status boys. Straus and Yodanis (1996), using retrospective data from over 4000 couples in the US National Family Violence Survey, found that exposure to corporal punishment in childhood increased the risk of later IPV for both males and females. In addition, using a prospective design, Swinford and colleagues (Swinford, DeMaris, Cernkovich, & Giordano, 2000) found that exposure to harsh physical discipline in childhood was related to increased risk of later IPV in a ten-year follow-up of a longitudinal study of adolescents. Simons and colleagues (Simons, Johnson, Beaman, & Conger, 1993 ) found, using retrospective data from a sample of divorced women derived from the longitudinal Iowa , that exposure to harsh parenting in childhood increased the risk of being the victim of IPV in adulthood. The findings of these studies suggest that exposure to high levels of childhood physical punishment increases the risk that an individual will be involved in intimate partner violence later in life.

Studies have also suggested that witnessing interparental violence in childhood may lead to increased risks of IPV later in life. For example, Kalmuss (1984) found, using cross-sectional data, that both males and females who witnessed interparental aggression were more likely to be involved in marital aggression as adults. Kwong et al. (Kwong, Bartholomew, Henderson, & Trinke, 2003), using retrospective data from a telephone survey of over 1000 Canadian adults, found that witnessing interparental violence was associated with both physical and psychological abuse perpetration and victimization in adult romantic relationships. Ehrensaft and colleagues (2003), using a prospective longitudinal design, reported that exposure to violence between parents was a significant predictor of violent behavior towards one's partner. These findings were underwritten by a meta-analysis of the literature by Stith et al. (2000) that concluded that there was a moderate but significant association between exposure to interparental violence and later IPV. The collective findings of these studies suggest that exposure to interparental violence in childhood increases the risk that an individual will be involved in IPV later in life.

### *Conduct disorder and violent behavior in childhood and adolescence*

Several studies have also suggested that individual factors such as problematic or conduct-disordered behavior in childhood may be related to later IPV. The study by Ehrensaft et al. (Ehrensaft et al., 2003) found that childhood conduct disorder was the strongest predictor of perpetrating IPV later in life. Capaldi and Clark (1998) found that conduct disorder in adolescence mediated the association between exposure to poor parenting in childhood and later interpartner violence perpetration in a longitudinal sample of young men. A similar finding was reported by Swinford et al. (2000). Magdol and colleagues (Magdol, Moffitt, Caspi, & Silva, 1998), using a prospective longitudinal sample, found that conduct disorder in childhood and adolescence was the most consistent predictor of later partner abuse. Also, Hanson and colleagues (Hanson, Cadsky, Harris, & Lalonde, 1997) found that anti-social personality disorder was significantly related to spousal abuse in a clinical sample of men. The findings of these studies suggest that conduct disorder in childhood and adolescence may lead to an increased risk of later IPV.

In addition, it has also been suggested that early indicators of violent and aggressive behavior may be related to later IPV. For example, O'Leary et al. (O'Leary, Malone, & Tyree, 1994) found that childhood and adolescent aggression predicted later IPV in a sample of over 300 couples. Similarly, Magdol and colleagues (Magdol et al., 1998) found that IPV perpetration and victimization at age 21 were related to violent delinquency at age 15 for both males and females.

### *Family adversity and dysfunction*

Research has suggested that a number of other factors may play a role in the developmental processes leading to later IPV. For example, Simons and colleagues, using four waves of family data, found that an anti-social orientation in the family of origin was the strongest predictor of whether an individual would later engage in IPV (Simons, Wu, Johnson, & Conger, 1995). Also, Fergusson et al. (Fergusson, Horwood, & Lynskey, 1994) found that exposure to a variety of

adverse family conditions in childhood was related to a variety of problems in adolescence, including criminal offending (which may in turn be related to later IPV). In general, it has been argued that family stress, dysfunction, parental alcoholism, and lack of adequate material resources are related to increased levels of interparental violence in the family of origin, which then may in turn be related to increased risks of later IPV (Emery & Billings-Laumann, 1998; Tolan et al., 2006).

*Additional factors: substance abuse/dependence, mental health disorders*

In addition to the above, it may be conjectured that early indicators of chronic substance use disorders and mental health problems may be related to later IPV. It has been well-documented that IPV is associated with both substance abuse/dependence and mental health disorders, such that individuals who experience such disorders are more likely to be involved in IPV (Danielson, Moffitt, Caspi, & Silva, 1998; Leonard, 2001; Makara-Studzinska & Gustaw, 2007; Mojtabai, 2006; Stuart, Meehan et al., 2006; Stuart, Moore, Gordon, Ramsey, & Kahler, 2006). It is also the case that substance abuse/dependence and mental health disorders in adulthood are predicted by the presence of the same disorders in adolescence (Coffey, Carlin, Lynskey, Li, & Patton, 2003; Ferdinand & Verhulst, 1995; Hofstra, Van der Ende, & Verhulst, 2000, , 2002; Patton et al., 2007). Therefore, it could be argued that a predisposition to IPV may develop via substance abuse/dependence and mental health disorders which begin to manifest themselves during the adolescent years. Indeed, Lehrer and colleagues (Lehrer, Buka, Gortmaker, & Shrier, 2006) reported that depressive symptomatology among female adolescents was associated with an increased risk of IPV victimization in adulthood.

*Background to the Present Study*

While there has been growing research into the developmental antecedents of IPV, there are some important unresolved issues in this area. In particular, a large amount of the research has focused

on violence towards women, and thus has described the developmental antecedents of male partner violence. In turn, this emphasis has led to a neglect of the origins and antecedents of female-perpetrated IPV (Dutton, 1994; Dutton & Nicholls, 2005; Straus & Scott, in press). Furthermore, the emphasis on male-perpetrated violence has led to a focus on the factors in the male life course that lead to later violence.

In addition, to a large extent research in this area has focused on the issue of the perpetration of IPV, and less attention has been given to the developmental factors associated with victimization. For example, the US Centers For Disease Control and Prevention Intimate Partner Violence Factsheet (Centers for Disease Control and Prevention, 2006) lists “Witnessing or experiencing violence as a child” as the only developmental factor associated with increased risk of IPV victimization. Several other studies have also suggested that exposure to violence in childhood, childhood victimization, and childhood and adolescent mental health may be related to later IPV victimization (Desai, Arias, Thompson, & Basile, 2002; Keenan-Miller, Hammen, & Brennan, 2007; Lehrer et al., 2006; Papadakaki, Tzamalouka, Chatzifotiou, & Chliaoutakis, 2008; Seedat, Stein, & Forde, 2005). However, it is clear that the literature on IPV victimization is more limited than that concerning IPV perpetration.

Against this general background the aims of this research were to address these issues by using data gathered over a 25 year longitudinal study to examine the developmental antecedents of IPV in adulthood, and to examine the extent to which the early risk factors and life processes associated with later IPV vary for males and females. The specific aims of the study were:

1. To estimate the prevalence of exposure to various forms of IPV on the basis of both victim and perpetrator reports;
2. To examine the developmental antecedents of IPV victimization and perpetration;
3. To determine whether there were gender differences in the developmental processes associated with IPV victimization and perpetration in adulthood.

## Method

The data reported here were gathered during the course of the Christchurch Health and Development Study. The Christchurch Health and Development Study is a longitudinal study of an unselected birth cohort of 1,265 children born in the Christchurch (New Zealand) urban region during a 4-month period in mid-1977. This cohort has been studied at birth, 4 months, 1 year, annual intervals to age 16 years, and at ages 18, 21, and 25 years. A more detailed description of the study and an overview of study findings have been provided by Fergusson, Horwood, Shannon, and Lawton (1989) and Fergusson and Horwood (2001).

At age 25, 1,003 sample members were assessed. This sample represented 79% of the original cohort. The present analysis is based upon the 828 sample members (437 women, 391 men) who were assessed at age 25 and who reported that they were currently or had been involved in a close or intimate partner relationship in the past 12 months that had lasted for at least a month or longer. Of these individuals, 12.3% were legally married. The following measures were used in the analysis.

### *Interpartner Violence (24 - 25 years)*

At age 25, sample members in partnerships of over one month duration in the last year were asked about the occurrence of IPV using a 22-item scale that incorporated selected items from the Revised Conflict Tactics Scale (CTS2, Straus, Hamby, Boney-McCoy, & Sugarman, 1996). The selected items spanned the domains of minor psychological aggression, severe psychological aggression, minor physical assault, severe physical assault, and sexual coercion as described by Straus et al. (1996). Questioning about sexual coercion was limited to two items (using threats to make partner have sex and using physical force to make partner have sex). The 22-item scale was presented twice; once to assess IPV victimization, and a second time to assess the perpetration of IPV. To devise measures of: (a) exposure to violence in the cohort; and (b) the overall perpetration of

violence in the cohort, each item was scored in dichotomous (absent/present) form and a scale score created from the sum of these items. These scales were found to have adequate reliability (victimization  $\alpha = .85$ ; perpetration  $\alpha = .79$ ).

In order to assess the extent of IPV resulting in extreme outcomes, an inspection was made of the medical history and mortality data held on this cohort. This showed that only one cohort member (male) and two partners (1 woman, 1 man) received medical attention for injuries resulting from IPV. By age 25, a total of 31 cohort members had died. None of the deaths recorded resulted from IPV. These findings suggest that the range of IPV studied within this cohort was confined to relatively mild or moderate incidents of violence and that extreme violence involving severe injury or death was not present with sufficient frequency for analysis. This limitation on the range of IPV studied should be borne in mind when interpreting the results.

### *Predictors of Interpartner Violence*

To examine the developmental antecedents of IPV victimization and perpetration, a series of measures was chosen from the data base of the study for inclusion in the analysis. These measures were selected on the basis of: (a) a review of the literature identifying factors which previously have been found to be associated with increased risks of IPV (see above); and (b) previous analyses based on the Christchurch Health and Development Study cohort which have identified factors associated with IPV (Fergusson, Boden, & Horwood, 2006; Fergusson et al., 2005a). The factors chosen for inclusion in the analyses were as follows:

### *Measures of family economic circumstances*

*Maternal and paternal education.* Maternal and paternal education levels were assessed at the time of the survey child's birth using a three point scale which reflected the highest level of educational achievement attained. This scale was: 1 = parent lacked formal educational qualifications (had not graduated from high school); 2 = parent had secondary level educational

qualifications (had graduated from high school); 3 = parent had tertiary level qualifications (had obtained a university degree or equivalent qualification).

*Family living standards (0-10 years).* At each year a global assessment of the material living standards of the family was obtained by means of an interviewer rating. Ratings were made on a five point scale that ranged from “very good” to “very poor”. These ratings were summed over the 10 year period and divided by 10 to give a measure of typical family living standards during this period.

*Family socioeconomic status (at birth and at age 14).* This was assessed at the time of the survey child’s birth, and again at age 14 using the Elley-Irving (Elley & Irving, 1976) scale of socioeconomic status for New Zealand. This scale classifies SES into 6 levels on the basis of paternal occupation ranging from 1 = professional occupations to 6 = unskilled occupations.

#### *Measures of exposure to abuse in childhood*

*Childhood sexual abuse.* At ages 18 and 21 years sample members were questioned about their experience of sexual abuse during childhood (< 16 years); (Fergusson, Lynskey, & Horwood, 1996b). Questioning spanned an array of abusive experiences from episodes involving non-contact abuse (e.g. indecent exposure) to episodes involving attempted or completed intercourse. Sample members who reported an abusive episode were then questioned further about the nature and context of the abuse. Using this information a 4-level scale was devised reflecting the most extreme form of sexual abuse reported by the young person at either age. This classification was: no sexual abuse; non-contact abuse only; contact sexual abuse not involving attempted or completed intercourse; attempted/completed oral, anal, or vaginal intercourse. Latent class analyses suggested that while reports of childhood sexual abuse were unstable ( $\kappa = .45$ ), there was no evidence to suggest that these reports were influenced by current mental state measures. Latent class analyses showed that combining the reports gathered at ages 18 and 21 using an “Or” algorithm in which the

participant was assigned to the most severe outcome reported at 18 or 21 led to a correct rate of assignment to the latent classes greater than 98% (Fergusson, Horwood, & Woodward, 2000).

*Parental use of physical punishment (childhood physical abuse).* At ages 18 and 21 sample members were asked to describe the extent to which their parents used physical punishment during childhood (Fergusson & Lynskey, 1997). Separate questioning was conducted for mothers and fathers. This information was used to create a 4-level scale reflecting the most severe form of physical punishment reported for either parent: parents never used physical punishment; parents rarely used physical punishment; at least one parent used physical punishment on a regular basis; at least one parent used physical punishment too often or too severely, or treated the respondent in a harsh or abusive manner. Latent class analyses suggested that while reports of childhood physical abuse were unstable ( $\kappa = .47$ ), there was no evidence to suggest that these reports were influenced by current mental state measures. Latent class analyses showed that combining the reports gathered at ages 18 and 21 using an “Or” algorithm in which the participant was assigned to the most severe outcome reported at 18 or 21 led to a correct rate of assignment to the latent classes greater than 98% (Fergusson et al., 2000).

*Interparental violence (0-16 years).* At the age of 18, sample members were questioned concerning their experience of interparental violence during their childhood (prior to age 16 years). The questioning was based on a series of eight items derived from the Conflict Tactics Scale (CTS; Straus, 1979). The items were chosen on the basis that the behaviors could have been readily observed and reported on by the participant, and also to span the potential range of violent behavior from verbal abuse to physical assault. The eight items used included: a) threaten to hit or throw something; b) push, grab, or shove other parent; c) slap, hit, or punch other parent; d) throw, hit, kick, or smash something (in the other parent’s presence); e) kick other parent; f) choke or strangle other parent; g) threaten other parent with a knife, gun, or other weapon; h) call other parent names or criticize other parent (put other parent down). Participants were questioned separately about

father-initiated and mother-initiated violence and, for each source, a measure of exposure to violence was created by summing the responses to each of the eight items. Finally, an overall measure was created by summing the responses for both father- and mother-initiated violence. These scales were found to have adequate reliability (perpetration by father  $\alpha = .86$ ; perpetration by mother  $\alpha = .77$ ; perpetration by both  $\alpha = .88$ ). The analyses reported here are based on the overall combined measure of interparental violence.

*Count measure of types of abuse exposure.* In order to create a graded measure of the individual's relative burden of abuse exposure (Dong et al., 2004), a count measure of types of abuse exposure was created. The measure was calculated by assigning a value of 1 if an individual was exposed to the most severe level of childhood sexual abuse, childhood physical punishment, or was in the highest decile for witnessing interparental violence. These values were then summed across the three forms of abuse to calculate the count measure.

### *Measures of family functioning*

*Parental illicit drug use.* When sample members were aged 11, information was obtained from parents as to whether any parent had a history of illicit drug use. The young person was classified as having a parent history of illicit drug use if one of his/her parents was reported to have a history of illicit drug use. Examination of the data revealed that 24.9% of the sample were classified as having a parental history of illicit drug use.

*Parental criminality* – when sample members were aged 15 years, their parents were questioned as to whether any parent had a history of criminal offending. The young person was classified as having a parent history of criminality if one of his/her parents was reported to have a history of offending. Examination of the data revealed that 12.4% of the sample were classified as having a parental history of criminality.

*Family problems measure.* A measure of family problems was calculated using a count measure of 38 different measures of family disadvantage during the period 0-15 years, including

measures of disadvantaged parental background, poor pre-natal health practices and perinatal outcomes, and disadvantageous child-rearing practices (Fergusson et al., 1994).

*Measures of childhood and adolescent adjustment*

*Early aggressive behavior (ages 3-5).* When the child was aged 3 to 5 years old, parents were questioned as to the extent to which their child engaged in a series of problem behaviors, including aggressive behavior. A measure of early aggressive behavior was calculated using a count measure of the number of times during the period 3 to 5 years that the parent indicated that the child had a problem with behaving aggressively, ranging from 0-3.

*Child conduct problems (ages 7-13).* When sample members were aged 7 - 13 years, information on child behavior problems was obtained from parental and teacher report. Parental reports were obtained from an interview with the child's mother using a behavior questionnaire that combined items from the Rutter, Tizard, and Whitmore (1970) and Conners (1970) parental questionnaires. Parallel to the maternal report, the child's class teacher was asked to complete a combined version of the Rutter et al. (1970) and Conners (1969) teacher questionnaires. Factor analysis of the item-level report data showed that it was possible to select items from these reports that formed uni-dimensional scales reflecting the extent of parent-reported and teacher reported conduct problems in three domains of behavior (Fergusson & Horwood, 1993; Fergusson, Horwood, & Lloyd, 1991). For the purposes of the present analysis, the parent and teacher reports were summed and the resulting scores averaged over the seven year period to produce a scale score measure reflecting the extent of the child's tendencies to conduct problems at ages 7-13. The alpha reliability of this scale was .97.

*Conduct disorder (ages 15-18).* Conduct disorder symptoms at ages 15-16 were assessed using the Self-Report Early Delinquency Scale (SRED: Moffitt & Silva, 1988) and at age 18 using the Self Report Delinquency Inventory (SRDI: Elliott & Huizinga, 1989). Sample members who

met diagnostic criteria for conduct disorder during an assessment period were classified as having the disorder during that period.

*Violent offending, (ages 12-18).* At ages 12 through 16, sample members were questioned about the young person's juvenile offending behaviors over the preceding year using the Self Report Early Delinquency Scale (Moffitt & Silva, 1988). As part of this questioning, information was obtained on participant involvement in a range of violent offending behaviors including assault, fighting, threatening behavior, physical coercion, cruelty to animals, and use of a weapon. At age 18, sample members were questioned about their offending behaviors and contact with the criminal justice system over the period 17-18 years. The questions were based on items from the Self Report Delinquency Inventory (SRDI: Elliott & Huizinga, 1989). Using the responses to the SRDI, a measure of violent crime was created based on the sum of the number of violent offenses reported in each interval including assault, fighting, physical coercion, cruelty to animals, and firearms offenses. The participants' responses on each of these measures were used to calculate a count measure of the number of different types of violent offending, which was then averaged over the period 12 years to 18 years. The resulting measure thus reflects the diversity of violent offenses reported by participants at ages 12-18 years.

*Mental disorders (major depression, anxiety disorder, alcohol abuse/dependence, illicit substance abuse/dependence, 15-18 years).* At age 16 items from the Diagnostic Interview Schedule for Children (DISC, Costello, Edelbrock, Kalas, Kessler, & Klaric, 1982) were used to assess DSM-III-R (American Psychiatric Association, 1987) symptom criteria for major depression and a range of anxiety disorders (including generalized anxiety disorder, panic disorder, agoraphobia, social phobia, and specific phobia). At age 18 these disorders were assessed using the Composite International Diagnostic Interview (CIDI, World Health Organization, 1993) items and DSM-IV (American Psychiatric Association, 1994) diagnostic criteria. For the purposes of the present analysis sample members who met DSM-IV diagnostic criteria for a major depressive episode at any time during an assessment period were classified as having major depression during

that assessment period (23.2% of the sample at age 15-18). Similarly, sample members who met DSM-IV diagnostic criteria for one or more anxiety disorders during the specified periods were classified as having an anxiety disorder (29.0% of the sample at age 15-18). In addition, alcohol abuse/dependence and illicit drug abuse/dependence during ages 15-18 were assessed by items from the CIDI to assess DSM-IV symptom criteria for alcohol abuse/dependence and illicit drug abuse/dependence respectively. Individuals who met the relevant DSM-IV diagnostic criteria for alcohol or illicit drug abuse/dependence at any point during the period 15-18 years were classified as having alcohol or illicit drug abuse/dependence for that period (21.8% of the sample for alcohol abuse/dependence, 4.8% of the sample for illicit drug abuse/dependence).

### *Statistical analyses*

The bivariate associations between predictors and the measures of IPV victimization and perpetration at age 25 were estimated through the calculation of Pearson product-moment correlations between each predictor and both IPV victimization and perpetration. Then, in order to model the multivariate associations between the predictors and the measures of IPV victimization and perpetration, ordinary least squares regression models were constructed in which the predictors were entered into the model in both forward and backward stepwise fashion. These models were of the form:

$$Y_i = B_0 + \sum B_i X_i + U_i \quad \text{EQ1}$$

where  $Y_i$  was the score on the measure of IPV victimization or perpetration at ages 24-25,  $X_i$  was the individual's score for each particular predictor and  $U_i$  was the model disturbance. These models were then refined to arrive at the set of statistically significant predictors for both IPV victimization and perpetration at ages 24-25.

In order to account for possible gender differences in risk factors for IPV victimization and perpetration, separate ordinary least squares models of the risk factors for IPV were fitted separately

for females and for males. Then, in order to examine whether the effects of the risk factors for IPV differed according to gender, the associations were between each significant predictor and the measures of victimization and perpetration were estimated for each gender group by fitting a series of nested ordinary least squares regression models of the form:

$$Y_i = B_0^k + \sum B_j^k X_j + U_i \quad \text{EQ2}$$

where  $Y_i$  was the score on the measure of IPV victimization or perpetration at ages 24-25,  $X_j$  was the individual's score for a particular predictor and  $U_i$  was the model disturbance. In this model the intercept parameters  $B_0^k$  and slope parameters for predictor  $B_1^k$  were permitted to vary with gender  $k$  ( $k=1, 2$ ). The parameters  $B_0^k$  thus represent the main effects of gender and the parameters  $B_j^k$  represent the effect of the predictors within levels of gender. Tests of gender equality were based on the test of the null hypothesis that  $H_0: B_j^1 = B_j^2$ .

In addition, because it could be argued that the data for IPV victimization and perpetration were a count measure and were therefore not normally distributed, the models described above were refitted using negative binomial regression methods. The use of negative binomial modelling techniques produced the same pattern of results as reported below.

### *Missing Data*

As noted previously, the analysis was based on the 828 sample members who reported a partnership out of a total of 1,003 participants assessed at age 25. To assess the possible effects of sample selection bias, tests were conducted to examine the extent to which the obtained sample of 1,003 was representative of the original cohort of 1,265 participants enrolled in the study. This analysis showed that there were slight but statistically significant ( $p < .05$ ) tendencies for the obtained sample to under-represent individuals from more socially disadvantaged backgrounds (low parental education, low socioeconomic status, single-parent family). To take these biases into account, the sample was poststratified into a series of groups on the basis of these characteristics, and the

probability of study participation estimated for each group using the methods described by Carlin, Wolfe, Coffey, and Patton (1999). All analyses were then repeated with the data for the analysis sample of 828 participants weighted by the inverse of the probability of study participation. In addition, there were small amounts of missing data for some covariate factors. To examine the implications of missing values, regression imputation of missing data was conducted and the analyses repeated with the missing values on each covariate replaced by the imputed values. In all cases, these reanalyses produced essentially the same pattern of results to those reported here, suggesting that the conclusions of this study were unlikely to have been influenced by missing data and selection bias.

## Results

### *Interpartner violence victimization and perpetration*

As explained in Methods, IPV victimization and perpetration scores were constructed by summing the number of different types of reported violence. These resulted in scores that ranged from 0 to 22. Tables 1a and 1b show the scale score divided into a series of class intervals ranging from those with no reports of violence, to those reporting seven or more types of violent victimization (Table 1a) and perpetration (Table 1b). For each class interval, the Tables report on the distributions of these scores, and the relationships between the total scores and: (a) the CTS subscale measures; and (b) concurrent validation measures including both injury as a result of IPV and fear of partner. The Tables show that for both IPV victimization and perpetration, there was a spectrum of IPV ranging from no violence to relatively extreme partner violence. Reports of victimization indicated that 33.6% of the participants reported no violence in their relationship, with 5.7% reporting high levels involving both psychological and physical violence. Increasing reports of IPV were accompanied by increasing rates of both injury and fearfulness of partner. Similar trends were evident for perpetration reports. In addition, victimization and perpetration reports were highly correlated ( $r =$

.81). This reflects the fact that, in most instances, respondents reported mutual IPV, with 90% of those reporting IPV victimization reporting IPV perpetration, and 94% of those reporting IPV perpetration reporting IPV victimization.

There were no significant differences between males and females in terms of reported IPV victimization. The mean victimization score for females was 2.12 (SD = 2.91) compared to the mean of 2.28 (SD = 2.71) for males ( $p > .40$ ). However, there was a significant difference between males and females in terms of reported IPV perpetration, such that females reported higher levels of IPV perpetration. The mean perpetration score for females was 2.15 (SD = 2.26), compared to a mean of 1.66 (SD = 2.04) for males ( $p < .01$ ). In terms of the CTS victimization subscale measures, 11.3% of males and 7.3% of females reported being exposed to minor physical assault; 7.7% of males and 3.4% of females reported severe physical assault; 65.7% of males and 66.1% of females reported minor psychological aggression; and 15.4% of males and 9.2% of females reported severe psychological aggression. For the CTS perpetration subscale measures, 6.7% of males and 5.5% of females reported committing minor physical assault; 2.8% of males and 3.2% of females reported severe physical assault; 56.7% of males and 68.7% of females reported minor psychological aggression; and 6.9% of males and 9.2% of females reported severe psychological aggression.

INSERT TABLES 1A AND 1B HERE

### *Factors Associated With Interpartner Violence Victimization and Perpetration*

Table 2 shows the Pearson product-moment correlations between IPV victimization and perpetration scores and a series of factors hypothesized to be associated with IPV (see Methods), both stratified by gender and overall. The factors are categorized into blocks corresponding to the nature of the various factors: (a) family economic background; (b) exposure to abuse and violence in childhood; (c) family functioning; (d) conduct disorder, aggression, and offending behavior; and (d) substance dependence and mental health disorders. The Table shows that:

1. Both IPV victimization and perpetration at ages 24-25 were significantly ( $p < .0001$ ) correlated with measures of economic circumstances of the family of origin. Higher levels of IPV victimization and perpetration in adulthood were associated with lower levels of both maternal and paternal education, average family living standards ages 0-10, and socio-economic status at birth and at age 14.
2. IPV victimization and perpetration at ages 24-25 were also correlated with several measures of exposure to abuse during childhood. Higher levels of IPV victimization were associated with exposure to more severe forms of sexual abuse ( $p < .05$ ) and physical punishment ( $p < .0001$ ), and with higher scores on a measure of overall exposure to an abusive environment in childhood ( $p < .0001$ ). However, IPV victimization was not associated with higher levels of exposure to interparental IPV ( $p > .05$ ). IPV perpetration at ages 24-25 was associated with exposure to more severe forms of sexual abuse ( $p < .0001$ ) and physical punishment ( $p < .001$ ), higher levels of exposure to interparental violence ( $p < .0001$ ), and higher scores on a measure of overall exposure to an abusive environment in childhood ( $p < .0001$ ).
3. IPV victimization and perpetration at ages 24-25 were also correlated with several measures of family functioning. Higher levels of IPV victimization were associated with a higher incidence of parental illicit drug use ( $p < .01$ ), a higher incidence of parental criminal offending ( $p < .01$ ), and with higher scores on an overall measure of family problems ( $p < .0001$ ). Higher levels of IPV perpetration were associated with a higher incidence of parental illicit drug use ( $p < .01$ ) and with higher scores on the overall measure of family problems ( $p < .0001$ ), but were not associated with parental criminal offending ( $p > .05$ ).
4. IPV victimization and perpetration at ages 24-25 were also correlated with several measures of conduct disorder and aggressive behavior. Higher levels of IPV victimization were associated with conduct problems at ages 7-13 ( $p < .0001$ ), conduct disorder/anti-social personality disorder at ages 15-18 ( $p < .0001$ ), and self-reported violent offenses at ages 12-18 ( $p < .05$ ). However, IPV victimization at ages 24-25 was not associated with early aggressive behavior

ages 3-5 ( $p > .05$ ). Higher levels of IPV perpetration were associated with early aggressive behavior ( $p < .05$ ), conduct problems at ages 7-13 ( $p < .0001$ ), conduct disorder at ages 15-18 ( $p < .0001$ ), but were not associated with the number of self-reported violent offenses from ages 12-18 ( $p > .05$ ).

5. IPV victimization and perpetration at ages 24-25 were also correlated with several measures of adolescent substance abuse/dependence and mental health measures. IPV victimization was associated with alcohol abuse/dependence at ages 15-18 ( $p < .0001$ ), and illicit drug abuse/dependence at ages 15-18 ( $p < .01$ ). However, IPV victimization was not associated with major depression at ages 15-18 ( $p > .70$ ) or anxiety disorder at ages 15-18 ( $p > .10$ ). Higher levels of IPV perpetration were associated with a greater incidence of alcohol abuse/dependence at ages 15-18 ( $p < .0001$ ), illicit substance abuse/dependence at ages 15-18 ( $p < .01$ ), major depression at ages 15-18 ( $p < .05$ ), and anxiety disorder at ages 15-18 ( $p < .01$ ).

INSERT TABLE 2 HERE

*Risk factors for interpartner violence victimization and perpetration, ages 24-25*

To examine the extent to which the factors listed in Table 2 were predictive of alter IPV victimization and perpetration, least squares regression models were fitted to the data (see Methods). These models used forward and backward variable elimination to identify a stable and parsimonious set of predictors for both IPV victimization and IPV perpetration. Table 3 shows the parameter estimates, standard errors, standardized regression coefficients, and tests of significance for each model. The Table shows:

1. There were three developmental predictors of IPV victimization scores: conduct problems at ages 7-13 ( $\beta = .13$ ,  $p < .01$ ), the measure of family adversity ( $\beta = .13$ ,  $p < .001$ ), and the measure of overall abuse exposure in childhood ( $\beta = .08$ ,  $p < .05$ ). All of these measures share the

feature of measuring long run features of childhood. The multiple correlation between the developmental factors and IPV victimization scores was .25.

2. There were four developmental predictors of IPV perpetration scores: conduct problems at ages 7-13 ( $\beta = .09, p < .05$ ), the measure of family adversity ( $\beta = .17, p < .0001$ ), the measure of overall abuse exposure in childhood ( $\beta = .08, p < .05$ ), and alcohol abuse/dependence at ages 15-18 ( $\beta = .10, p < .01$ ). The multiple correlation between these factors and the perpetration scores was .29.

These findings indicate considerable overlap between the risk factors for victimization and the risk factors for perpetration. These results are consistent with the finding that victimization and perpetration were highly correlated outcomes.

INSERT TABLE 3 HERE

*Tests of gender equality in interpartner violence victimization and perpetration, ages 24-25*

To examine whether the risk factors for IPV varied with gender, a two stage strategy was followed. In the first stage of this strategy, separate models were fitted to data for males and females to determine whether the same set of risk factors applied to both gender groups. This analysis confirmed that the factors identified in Table 3 were common to the predictors of IPV victimization and perpetration for both gender groups.

In the next stage of the analysis, nested regression methods were used to test the similarity of model parameters across gender groups (see Methods). The results of this analysis are reported in Table 4, which shows for both victimization and perpetration: (a) the estimated unstandardized model coefficients for males and females; and (b) the test of equality of regression coefficients. The Table shows that while the same risk factors were related to IPV reported by males and females, the ways in which some of these factors operated varied with gender. Specifically, the Table shows:

1. The association between conduct disorder and IPV victimization differed significantly between males and females (LR  $\chi^2(1) = 7.43$ ,  $p < .01$ ) when nested within gender. The analyses also revealed that the association between conduct disorder and IPV perpetration differed significantly between males and females (LR  $\chi^2(1) = 7.63$ ,  $p < .01$ ) when nested within gender. Examination of the regression parameters suggested that conduct disorder at ages 7-13 was a stronger predictor of IPV victimization and perpetration at ages 24-25 for females than for males.
2. The association between exposure to abuse and IPV victimization differed significantly between males and females (LR  $\chi^2(1) = 13.18$ ,  $p < .001$ ) when nested within gender. Similarly, the analyses revealed that the association between exposure to abuse and IPV perpetration differed significantly between males and females (LR  $\chi^2(1) = 5.78$ ,  $p < .05$ ) when nested within gender. Examination of the regression parameters suggested that exposure to abuse in childhood was a stronger predictor of IPV victimization and perpetration at ages 24-25 for males than for females.
3. The regression parameters for the association between exposure to adverse family circumstances and IPV perpetration differed marginally between males and females (LR  $\chi^2(1) = 2.84$ ,  $p > .05$ ). Examination of the regression parameters suggested that exposure to family adversity was a marginally stronger predictor of IPV perpetration for males than for females. However, there was no evidence of gender differences in the association between family adversity and IPV victimization (LR  $\chi^2(1) = 2.15$ ,  $p > .10$ ).
4. Finally, there was no evidence of gender differences for the association between alcohol abuse/dependence in late adolescence and later IPV perpetration (LR  $\chi^2(1) = 2.84$ ,  $p > .20$ ).

INSERT TABLE 4 HERE

## Discussion

In this paper we have used data gathered over the course of a 25-year longitudinal study to examine three related issues: (a) the prevalence of interpartner violence (IPV) victimization and perpetration in young adults; (b) the developmental antecedents of IPV victimization; and (c) gender differences in the prevalence and antecedents of IPV. These issues are discussed below.

### *The prevalence of interpartner violence*

In this study we have used data on IPV to form scales of victimization and perpetration, to rank members of this cohort from those not involved in IPV to those reporting moderately severe incidents. The core items used to form these scales came from the Revised Conflict Tactics Scale (CTS2, Straus et al., 1996). There have been criticisms of this scale since it does not record the consequences of domestic violence in terms of injury or partner intimidation (Fagan & Browne, 1994; Saunders, 2002; Taft, Hegarty, & Flood, 2001). To address these issues, measures of injury and partner fear were included in the analysis to cross validate the proposed scales. These analyses suggested that the measures of self reported victimization were internally consistent and valid.

The distribution of scale scores in terms of victimization suggested that the majority of partner relationships involved some degree of conflict, with a small minority (5.7 %) involving severe and repeated psychological and physical violence. Over half of those in this extreme group had been injured as a result of domestic violence, and a quarter reported being afraid of their partner. Examination of self reported perpetration data showed similar trends, although the reported rates of perpetration were lower than rates of victimization. There was a strong correlation between perpetration and victimization reports, reflecting the fact that at least 90% of IPV appeared to take place in the context of mutual partner conflict.

### *The developmental antecedents of interpartner violence*

An important feature of the present study was the availability of extensive longitudinal data that made it possible to examine the developmental antecedents of IPV in young adulthood. This analysis identified four domains of development that were associated with increased risks of later IPV.

First, young adults involved in IPV were more likely to have been reared in home environments subject to multiple social, economic, and related adversity including disadvantaged parental background, poor pre-natal health practices and perinatal outcomes, multiple changes of parents, and disadvantageous child-rearing practices. This evidence is consistent with a very large body of evidence linking childhood family environment to later psychosocial problems and difficulties (e.g. Ackerman, Kogos, Youngstrom, Schoff, & Izard, 1999; Fergusson et al., 1994; Jaffee et al., 2002; Moffitt et al., 2007; Tremblay et al., 2004). The present study clearly suggests that exposure to an adverse and dysfunctional home environment in childhood increases longer term risks of IPV.

Second, young adults involved in IPV had greater exposure to child abuse and family violence. These findings are again consistent with a large literature that has linked exposure to child abuse and family violence to adverse long term outcomes (Cicchetti & Toth, 2005; Fergusson, Boden, & Horwood, in press; Fergusson & Mullen, 1999; Goodwin, Fergusson, & Horwood, 2005; Kaplan, Pelcovitz, & Labruna, 1999; Putnam, 2003; Widom, 2000). While a number of authors have suggested the presence of a specific link between exposure to IPV in childhood and later IPV (Edleson, 1999; Ehrensaft et al., 2003; Kalmuss, 1984; Kolbo, Blakely, & Engleman, 1996; Stith et al., 2000; Widom, 1989), we did not find this to be the case. Rather, our findings suggested a more diffuse relationship in which the important predictor was the child's overall level of exposure to child abuse and family violence.

Third, young adults involved in IPV were more likely to have a pervasive history of conduct problems during middle childhood (7-13 years). This finding is again consistent with a large body

of evidence that has linked the presence of conduct problems in childhood to increase risks of later problems of psychosocial adjustment including violence, crime, mental health problems, and substance abuse (Bardone, Moffitt, Caspi, Dickson, & Silva, 1996; Caspi, 2000; Dodge & Pettit, 2003; Farrington, 1998; Fergusson et al., 1994; Fergusson, Horwood, & Ridder, 2005b; Fergusson & Lynskey, 1998; Flory, Milich, Lynam, Leukefeld, & Clayton, 2003; Kim-Cohen et al., 2003; Kratzer & Hodgins, 1997; Miller-Johnson, Lochman, Coie, Terry, & Hyman, 1998; Zoccolillo, Pickles, Quinton, & Rutter, 1992).

Finally, those involved in IPV perpetration had higher rate of alcohol abuse and dependence in adolescence (15-18 years). These findings are again consistent with a large body of evidence that has linked the use and abuse of alcohol to increase risks of domestic and other forms of violence (Cunradi, 2007; Fergusson & Horwood, 2000; Fergusson, Lynskey, & Horwood, 1996a; Follingstad, Bradley, Laughlin, & Burke, 1999; Houry, Reddy, & Parramore, 2006; Leonard, 2001; O'Leary, Tintle, Bromet, & Gluzman, 2008).

An interesting and important finding from the analyses was that the predictors of IPV perpetration were strikingly similar to those of IPV victimization. This similarity is largely explained by the strong correlation between victimization and perpetration. These results in turn suggest that the predictor domains described above were, in fact, predictors of the individual's likelihood of entering a violent relationship. The profile of the young person at risk of being a domestic violence perpetrator or victim was that of a child reared in a family context subject to multiple adversities, who had exposure to child abuse and family violence, and who showed long term adjustment difficulties throughout childhood.

In terms of the prevention of domestic violence, the findings of this study clearly suggest that programmes that minimize childhood exposure to family adversity, reduce risks of exposure to child abuse and family violence, address the development of conduct problems, and address issues of adolescent alcohol use offer the best hope for reducing the prevalence of IPV.

### *Gender differences*

All research into IPV is conducted against the backdrop of what Dutton (Dutton, 1994; Dutton & Nicholls, 2005) has described as “the feminist paradigm” (p. 682). This model, which dominates public discourse about domestic violence, views violence through a gendered lens that centers around the assumptions that: (a) most domestic violence involves male perpetrators and female victims; (b) female violence is defensive and reactive; and (c) the causes of domestic violence reflect the values of patriarchal social structures in which violence is used to control women and limit their opportunities (e.g. Bograd, 1988; Dobash & Dobash, 1979; Dobash, Dobash, Wilson, & Daly, 1992; Johnson, 1995).

While this model has been highly influential in setting the directions of domestic violence policy, it is almost completely discrepant with the findings of this and a growing number of studies (see for reviews: Archer, 2000; Dutton & Nicholls, 2005; Straus, 2006; Straus & Scott, in press). The major points of discrepancy with the present study were the fact that: (a) there were no differences in reported IPV victimization for males and females; and (b) there was an excess of females reporting IPV perpetration. However, this excess may reflect the fact that females may report perpetration more readily than males because of social sanctions against male perpetrated IPV (Brown, 2004; Dutton & Nicholls, 2005; Stets & Straus, 1990). On the basis of this evidence, it would seem reasonable to assume that, for this cohort, males and females were equally likely to engage in IPV and that the consequences of IPV were similar for both gender groups.

These findings raise important issues about reconciling claims that IPV is predominantly a male problem, with the growing body of evidence showing similar rates of IPV victimization and perpetration in both males and females (e.g. Archer, 2000; Ehrensaft, Moffitt, & Caspi, 2004; Fergusson et al., 2005a; Hines & Saudino, 2003; Kessler, Molnar, Feurer, & Appelbaum, 2001; Kwong, Bartholomew, & Dutton, 1999; Magdol et al., 1997; Straus, 1999; Straus & Gelles, 1986). The source of this conflict arises from the different views of gender differences in IPV that emerge from the analysis of population survey data and official statistics on homicide rates, convictions and

refuge attendance (Archer, 2000; Fergusson et al., 2005a; Johnson, 1995; Johnson & Ferraro, 2000). While population survey data have tended to suggest an absence of gender differences, official data tend to suggest a predominance of male perpetrators and female victims. Reconciling these differences is central to a balanced understanding of the issues of IPV. The most straightforward resolution of the evidence is to suggest that, while males and females appear to be equally predisposed to domestic violence, because of greater male strength and capacity for aggression, males predominate in the more extreme cases of IPV represented in officially recorded statistics (Johnson, 1995; Stets & Straus, 1990). It is of interest to note that IPV is not the only area in this type of gender paradox is present. For example, in the area of suicidal behaviors, females make more suicide attempts than males (Beautrais, 2002; Moscicki, Muehrer, & Potter, 1995; Welch, 2001), whereas more males than females die from suicide. This paradox is explained by the tendency of males to use more lethal methods (Beautrais, 2002; Kposowa, 2001; Moscicki et al., 1995; Sanford et al., 2006).

A further issue raised by the debate about gender differences in domestic violence concerns the extent to which the risk factors and life process associated with IPV by males differ from those associated with female IPV. The present study provided an opportunity to examine this issue. The findings of the analysis led to the conclusions that, while the risk factors for male and female IPV appeared to be the same, the effects of some of these factors varied with gender. In particular, the analysis suggested that the effects of childhood conduct problems on domestic violence were greater for females than for males. These findings suggest that the presence of problem behaviour in childhood is a stronger predictor of later IPV for females than for males. The mechanisms that lead to this association are unclear, but the findings are consistent with a literature that has suggested that the criteria for childhood conduct disorder should vary with gender, with the symptom threshold for female conduct disorder being set lower than the threshold for male conduct disorder (Cohen, 1996; Kratzer & Hodgins, 1997; Robins & Price, 1991; Zoccolillo, 1993).

A second point of difference was the finding that exposure to child abuse and family violence had greater effects on IPV for males than for females. This finding is consistent with recent behavioural genetic research that suggests that, because of a gene that encodes the neurotransmitter MAOA located on the Y chromosome, males may be more prone to develop antisocial behavior following exposure to child abuse than females (Caspi et al., 2002).

In general, the gender comparisons made in this study lead to three major conclusions. First, self reports of IPV victimization and perpetration suggested that males and females had similar levels of involvement in IPV. Second, the analysis found that the risk factors (childhood adversity, exposure to abuse/family violence, and conduct problems) were the same for males and females. Third, the effects of these risk factors varied with gender, with conduct problems being more influential for female involvement in IPV, whereas exposure to child abuse /family violence was more influential for male involvement in IPV.

#### *Limitations of the present study*

The present study has a number of limitations. First and foremost, the results apply to a specific cohort studied at a specific time and in a specific societal context. There is some evidence to suggest that age is an important factor in IPV statistics. IPV has shown to peak during the mid-20s, and decrease into old age (O'Leary, 1999). The extent to which the findings apply to other populations thus needs to be verified.

Second, despite the moderately large sample size, the study has been unable to examine extreme outcomes associated with IPV. These outcomes include death, severe injury, and severe psychological trauma. It is possible that the factors associated with these episodes of IPV may be different from the factors associated with the relatively mild incidents studied in this report. The possible role of sample attrition should also be borne in mind. As we report in the Method section, there was a small but detectable bias for the cohort to under-represent socially disadvantaged individuals and this may have adversely affected estimates of prevalence and association. At the

same time, the application of sample bias correction methods suggested that the effects of any such bias on the major conclusions were likely to be small. Also, because the data depend on report data about events that are rarely directly observable, the accuracy of the findings depends on the accuracy with which respondents reported involvement in IPV. It should be noted that the present study reported rates of physical violence victimization and perpetration that were somewhat lower than in other surveys and epidemiological studies (Magdol et al., 1997; O'Leary et al., 1989; Quigley & Leonard, 1999), although the reasons for these differences are unclear.

### *Implications*

The present study has a number of implications for policies relating to IPV. First and foremost, the results provide a further challenge to the dominant view that IPV is a "women's issue" and arises predominantly from assaults by male perpetrators on female victims. What the findings suggest is that among young adult populations, men and women are equally violent to intimate partners on the basis of reports of both victimization and perpetration for the range of IPV examined within this study. Furthermore, the spectrum of violence committed by men and women seems to be similar and there is evidence suggesting that both men and women engage in serious acts of physical violence against their partners. Finally, the developmental antecedents of IPV are similar for males and females, although the specific effects of these risk factors may differ by gender. The findings of the present study also show that IPV victimization was embedded in a wider context of psychosocial adversity that spanned childhood adversity, exposure to abuse, and adjustment problems in childhood and adolescence. Those individuals prone to violence victimization and perpetration tended to have high exposure to many adversities, and exposure to IPV appeared to be one component of a wider psychosocial history of disadvantage and difficulty.

These considerations suggest the need for a broadening of perspective in the field of IPV away from the view that IPV is usually a gender issue involving male perpetrators and female victims and toward the view that IPV most commonly involves violent couples who engage in

mutual acts of aggression. There is increasing evidence to suggest that, for the range of IPV examined within this study, IPV most often is an issue that affects couples and is often embedded in a more general context of psychological adversity (Moffitt, Robins, & Caspi, 2001; O'Leary, 2001). This conclusion implies a need for policies that encourage couples to work together to harmonize their relationships and to overcome the collective adversities that they face.

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Table 1a. Rates of violence and mean number of incidents of violence by IPV victimization score (24-25 years).

Measure	Violence victimization score (24-25 years)					Overall ( <i>n</i> = 828)
	0 ( <i>n</i> = 279)	1 - 2 ( <i>n</i> = 258)	3 - 4 ( <i>n</i> = 195)	5 - 6 ( <i>n</i> = 49)	7+ ( <i>n</i> = 47)	
<u>CTS2 subscales</u>						
Minor psychological aggression						
% Victim of aggression	0.0	99.2	100.0	98.0	100.0	65.9
Mean number of incidents	-	6.2	18.5	39.3	53.1	11.6
Severe psychological aggression						
% Victim of aggression	0.0	0.8	7.2	79.6	95.7	12.1
Mean number of incidents	-	0.03	0.3	4.4	16.8	1.3
Minor physical assault						
% Victim of assault	0.0	0.8	3.6	40.8	100.0	9.2
Mean number of incidents	-	0.01	0.04	2.3	18.2	1.2
Severe physical assault						
% Victim of assault	0.0	0.0	2.1	10.2	76.6	5.4
Mean number of incidents	-	0.0	0.2	1.1	7.9	0.6
<u>Concurrent validation measures</u>						
% Injured by partner	0.0	0.4	0.0	6.1	55.3	3.6
% Fearful of partner or feeling seriously intimidated	0.0	0.0	0.0	0.0	25.5	1.5

Table 1b. Rates (%) of violence and mean number of incidents of violence by IPV perpetration score (24-25 years).

Measure	Violence perpetration score (24-25 years)					Overall (n = 828)
	0 (n = 304)	1 - 2 (n = 231)	3 - 4 (n = 240)	5 - 6 (n = 25)	7+ (n = 28)	
<u>CTS2 subscales</u>						
Minor psychological aggression						
% Victim of aggression	0.0	99.1	100.0	100.0	100.0	63.0
Mean number of incidents	-	6.2	19.9	45.5	50.8	10.6
Severe psychological aggression						
% Victim of aggression	0.0	0.4	9.6	80.0	82.1	8.1
Mean number of incidents	-	0.01	0.33	2.7	13.1	0.62
Minor physical assault						
% Victim of assault	0.0	0.9	4.2	44.0	96.4	6.0
Mean number of incidents	-	0.01	0.08	1.4	13.6	0.53
Severe physical assault						
% Victim of assault	0.0	0.0	1.3	12.0	67.9	3.0
Mean number of incidents	-	-	0.01	0.16	2.9	0.11
<u>Concurrent validation measures</u>						
% Injured partner	0.0	0.0	2.1	12.0	60.7	3.0
% Partner fearful or feeling seriously intimidated	0.0	0.0	0.0	0.0	7.2	0.2

Table 2. Pearson product-moment correlations between IPV victimization and perpetration (ages 24-25) and predictors.

Predictors	Victimization			Perpetration		
	male	female	overall	male	female	overall
<u>Family economic circumstances</u>						
Maternal education level	-.15**	-.09*	-.12***	-.18***	-.14**	-.15****
Paternal education level	-.20****	-.06	-.12***	-.20****	-.05	-.12***
Average living standards ages 0-10	-.18***	-.16***	-.17****	-.17***	-.18****	-.18****
Socioeconomic status at birth	-.21****	-.06	-.13***	-.23****	-.09	-.15****
Socioeconomic status at age 14	-.13*	-.11*	-.12***	-.10	-.17***	-.14****
<u>Exposure to abuse in childhood</u>						
Childhood sexual abuse	.08	.10*	.08*	.14**	.13**	.15****
Child physical punishment	.15***	.14**	.15****	.10*	.14**	.12***
Exposure to interparental violence	.11*	.04	.06	.14**	.09	.11**
Count measure of types of abuse exposure	.17***	.15**	.16****	.18***	.18****	.19****
<u>Family functioning</u>						
Parental illicit drug use	.07	.13**	.10**	.05	.14**	.11**
Parental criminal offending	.17***	.04	.10**	.11*	.04	.07
Family adversity measure	.29****	.17***	.22****	.27****	.24****	.25****
<u>Conduct disorder, aggression, and offending behavior</u>						
Early aggressive behavior ages 3-5	.08	.05	.07	.10*	.10*	.09*
Conduct problems ages 7-13	.23****	.25****	.23****	.23****	.30****	.21****
Conduct disorder ages 15-18	.29****	.08	.20****	.32****	.10*	.20****
Number of self-reported violent offenses ages 12-18	.20****	.02	.13**	.19****	.03	.09*
<u>Mental health problems</u>						
Alcohol abuse/dependence ages 15-18	.18***	.09	.13****	.19****	.12*	.15****
Illicit substance abuse/dependence ages 15-18	.14***	.06	.09**	.14****	.07	.10**
Depression ages 15-18	.03	.01	.01	.02	.09	.08*
Anxiety ages 15-18	.13*	.01	.05	.14**	.04	.10**

Note: \* p < .05; \*\* p < .01; \*\*\* p < .001; \*\*\*\* p < .0001

Table 3. Parameter estimates for multivariate models of risk factors for IPV victimization and perpetration, ages 24-25.

Model and Predictors	Unstandardized B (SE)	Standardized regression parameter	p
<u>Victimization</u>			
Conduct problems ages 7-13	.05 (.01)	.13	<.01
Family adversity measure	.07 (.02)	.13	<.001
Count measure of abuse exposure	.33 (.16)	.08	<.05
<u>Perpetration</u>			
Conduct problems ages 7-13	.03 (.01)	.09	<.05
Family adversity measure	.07 (.02)	.17	<.0001
Count measure of abuse exposure	.27 (.12)	.08	<.05
Alcohol abuse/dependence ages 15-18	.52 (.18)	.10	<.01

Table 4. Parameter estimates for multivariate models of risk factors for IPV victimization and perpetration, ages 24-25, nested within gender.

Model and Predictors	Male B (SE)	Female B (SE)	Test of gender equality
<u>Victimization</u>			
Conduct problems ages 7-13	.02 (.02)	.11 (.03)	<.01
Family adversity measure	.11 (.03)	.03 (.03)	>.10
Count measure of abuse exposure	.35 (.24)	.03 (.21)	<.001
<u>Perpetration</u>			
Conduct problems ages 7-13	.02 (.01)	.09 (.02)	<.01
Family adversity measure	.07 (.02)	.05 (.02)	>.05
Count measure of abuse exposure	.32 (.19)	.08 (.16)	<.05
Alcohol abuse/dependence ages 15-18	.60 (.25)	.45 (.24)	>.20