

Intergenerational Transmission of Partner Violence: A 20-Year Prospective Study

Miriam K. Ehrensaft and Patricia Cohen

Columbia University College of Physicians and Surgeons and
New York State Psychiatric Institute

Jocelyn Brown

Columbia University College of Physicians and Surgeons

Elizabeth Smailes, Henian Chen, and Jeffrey G. Johnson

Columbia University College of Physicians and Surgeons and New York State Psychiatric Institute

An unselected sample of 543 children was followed over 20 years to test the independent effects of parenting, exposure to domestic violence between parents (ETDV), maltreatment, adolescent disruptive behavior disorders, and emerging adult substance abuse disorders (SUDs) on the risk of violence to and from an adult partner. Conduct disorder (CD) was the strongest risk for perpetrating partner violence for both sexes, followed by ETDV, and power assertive punishment. The effect of child abuse was attributable to these 3 risks. ETDV conferred the greatest risk of receiving partner violence; CD increased the odds of receiving partner violence but did not mediate this effect. Child physical abuse and CD in adolescence were strong independent risks for injury to a partner. SUD mediated the effect of adolescent CD on injury to a partner but not on injury by a partner. Prevention implications are highlighted.

Violent behavior toward a romantic partner is highly resistant to treatment (Dunford, 2000; McCord, 1992), yet preventive services for partner violence remain largely undeveloped (Chalk & King, 1998). Designing empirically informed partner violence prevention programs will require identification of major modifiable risk factors for both perpetrating and being the victim of partner violence. Research on risk factors for partner violence has had methodological problems, including cross-sectional designs and unrepresentative sampling that invalidate causal inferences about measured risk factors. In the present study, we used a longitudinal design to investigate the effect of clinically relevant developmental risk factors for partner violence to inform preventive programs.

Theoretical Model of Partner Violence Risk

An integrated model of partner violence risk is essential for identifying key target populations and modifiable risk factors to

Miriam K. Ehrensaft, Department of Psychiatry, Columbia University College of Physicians and Surgeons and New York State Psychiatric Institute; Patricia Cohen and Henian Chen, Departments of Psychiatry and Epidemiology, Columbia University College of Physicians and Surgeons and New York State Psychiatric Institute; Jocelyn Brown, Department of Pediatrics, Columbia University College of Physicians and Surgeons; Elizabeth Smailes and Jeffrey G. Johnson, Department of Epidemiology, Columbia University College of Physicians and Surgeons and New York State Psychiatric Institute.

This research was supported by grants from the National Institute of Justice and Grants MH-5-39415, MH-36971, and MH-30916 from the National Institute of Mental Health. We are grateful to Cathy Berenson for her assistance with data management.

Correspondence concerning this article should be addressed to Miriam K. Ehrensaft, Division of Child Psychiatry, Columbia University College of Physicians and Surgeons, 1051 Riverside Drive, Box 78, New York, New York 10032. E-mail: ehrensam@child.cpmc.columbia.edu

facilitate prevention. Our theoretical view draws from findings on family relations, developmental psychopathology, and basic developmental research on the formation of romantic relationships. From early childhood, family relations, especially parenting and the relationship between parents, influence the capacity for self-regulation of emotions and behavior and expectations about the meaning of interpersonal relationships (Gilliom, Shaw, Beck, Schonberg, & Lukon, 2002; Kopp, 1989; Siegel, 1999). Children who have experienced responsive caregiving develop expectations that their needs will be met in interpersonal relationships (Bowlby, 1969) and may be able to cope more adaptively with negative emotions (Carlson & Sroufe, 1995). Children who have experienced parental rejection or maltreatment tend to have hostile attribution biases and social problem-solving deficits (Dodge, Bates, & Pettit, 1990). They also learn to anticipate and anxiously avoid rejection and generalize this anticipation to interpersonal contexts beyond that with the maltreating adult (Downey & Feldman, 1996). Early maltreatment may have the most detrimental, lasting effect on children's social information processing patterns (Dodge et al., 1990), because these patterns are usually formed during the first 8 years of life (Dodge & Price, 1994). Maltreated children are more prone to rejection by normative peers as a function of deficits in interpersonal functioning and thus are more likely to gravitate to an aggressive, deviant peer group. As adolescents and emerging adults, they select their romantic partners from these groups of peers who are deficient in terms of interpersonal skills (Feiring & Furman, 2000) and experience conflictual romantic relationships (Downey & Feldman, 1996). Maltreatment may therefore be one pathway to involvement in conflictual, abusive romantic relationships (Wolfe, Wekerle, Reitzel-Jaffe, & Lefebvre, 1998).

However, childhood maltreatment per se may not be a necessary ingredient for partner abuse; rather, a more generally hostile,

maladaptive parenting history may be enough to create a risk for partner abuse. In particular, punishment that is excessively physical, power assertive, and inconsistent may increase the risk for behavior problems, aggression, and interpersonal difficulties (Cohen & Brook, 1995; Ehrensaft et al., in press; Fergusson & Linskey, 1997; Loeber & Stouthamer-Loeber, 1986). Excessively coercive punishment may serve as model for coercive conflict resolution that is learned and generalized from the parent-child relationship to the romantic partner relationship.

Beyond this, exposure to violence between parents may also teach youth that violence is an acceptable or effective means of resolving conflicts with partners. This social learning model has been argued effectively by O'Leary (1988) and by Jouriles and colleagues, who have developed a program of research studying developmental problems in children of battered women (e.g., Jouriles, Norwood, McDonald, & Peters, 2001). The contribution of exposure to domestic violence has primarily been tested in unrepresentative samples, most notably samples of children presenting to domestic violence shelters with their mothers. One exception is Fergusson and Horwood's (1998) longitudinal study of an epidemiological sample of 18-year-olds, which revealed independent effects of exposure to interparental violence on mental health problems, substance abuse, and juvenile crime after social and contextual factors had been taken into account. There is a need for further research with unselected samples to test the link between childhood exposure to domestic violence and risk for abusive relationships in adulthood (Jouriles, McDonald, Norwood, & Ezell, 2001).

The common thread linking maltreatment, punitive parenting, and exposure to violent parental conflict may reside in their serious disruptions of relationships with caregivers. Such disruptions result in emotion regulation deficits, faulty social information processing, and hostile expectations about the meaning of relationships; these deficits may in turn increase the risk for aggressive behavior in childhood and across the life span (Dodge et al., 1990). Ultimately, the continuity of oppositional, aggressive behavior across the life span may account for the relationships among child maltreatment, punishment, exposure to domestic violence, and partner abuse.

Patterns of emotional and behavioral self-regulation first learned and reinforced within the family are later applied to early peer interactions (Gilliom et al., 2002). With repetition, these peer interaction patterns are reinforced, forming stable modes of negotiation of emotional challenges and needs. Peer interactions in middle childhood and adolescence provide repeated opportunities to practice and shape conflict resolution skills (Hartup, 1996), which will later be applied to romantic relationships (Connolly & Goldberg, 1999).

When a child's interpersonal skills are aggressive and inconsistent with those normatively displayed by his or her peers, this child will be rejected by peers (Dishion, Patterson, Stoolmiller, & Skinner, 1991; Dodge, 1983). Such rejection, coupled with continued parental reinforcement of coercive interpersonal skills (Cohen & Brook, 1995; Dishion, Andrews, & Crosby, 1995), will limit future opportunities for learning constructive means of relating to others. The principal reason is that the child will gravitate toward a deviant peer group by early adolescence (Dishion et al., 1991). The deviant peer group serves as a training ground for antisocial and violent behavior from middle to late adolescence (Dishion, An-

draws, Kavanagh, & Soberman, 1996; Dishion, Eddy, Haas, Li, & Spracklen, 1997). Deviant peer groups further increase the risk of substance abuse (Dishion, Capaldi, Spracklen, & Li, 1995), which has been strongly linked to partner violence in adults (Murphy, O'Farrell, Fals-Stewart, & Feehan, 2001).

By the time an adolescent initiates his or her first romantic experiences, interpersonal skills and expectations about the nature of close relationships are well established within the family and peer contexts (Connolly & Goldberg, 1999). Peer groups also serve to regulate standards of behaviors within opposite-sex relationships, including partner selection, sexual behavior, and the pace of intimacy (B. B. Brown, 1999). In fact, antisocial males and females are especially likely to partner assortatively with one another (Krueger, Moffitt, Caspi, Bleske, & Silva, 1998). Further, deviant peer groups, at least in the case of males, may continue to negatively affect relationship functioning by reinforcing hostile attitudes toward women. In antisocial males, peer reinforcement of hostile talk about women has been observed and predicts aggression toward a partner in young adulthood (Capaldi, Dishion, Stoolmiller, & Yoerger, 2001). In summary, a deviant peer relation history brings together two individuals with histories of aggressive behavior, an absence of models of interpersonal relationships as responsive and nurturing, and ineffectual conflict resolution skills. The members of such couples are therefore forced to negotiate the developmental task of romantic relationship formation at a great disadvantage.

Several empirical studies support the theory of the continuity of antisocial behavior as an explanatory framework for partner violence. In a longitudinal study of boys at risk for antisocial behavior, Capaldi and Clark (1998) reported a path model in which unskilled parenting predicted childhood antisocial behavior, which in turn predicted partner violence. Further support for this path comes from Magdol, Moffitt, Caspi and Silva's (1998a) findings regarding the robust prospective contribution of childhood behavior problems to risk for partner violence and from Holtzworth-Munroe and Stuart's (1994) identification of a subtype of "antisocial/generally violent" male batterers. However, the path linking childhood maltreatment, childhood conduct problems, and partner violence in adulthood has received limited empirical testing.

Testing a Developmental Model of Partner Violence

On the one hand, the relatively new focus on developmental models of risks for partner abuse, focusing primarily on either family violence or antisocial behavior as an explanatory framework, has resulted in a major step forward for prevention. On the other hand, each model has posed somewhat different questions about the context of partner violence risk, and an integration of findings about different types of developmental risk factors is lacking. In its review of existing prevention and intervention programs for family violence, the National Research Council identified fragmentation of the field of family violence research as one of the greatest impediments to designing empirically informed interventions (Chalk & King, 1998). Studies of the effect of child maltreatment on partner violence risk have typically not included measures of conduct problems, so it is unclear whether risk for partner violence is a direct consequence of a history of childhood maltreatment or whether maltreatment is really a marker for some other, more direct causal variable. This is critical given that phys-

ical child abuse has been linked to a risk for externalizing behavior problems (Dodge, Pettit, & Bates, 1997). Similarly, studies identifying conduct problems and parenting practices as risk factors for partner violence usually have not controlled for childhood maltreatment. Further, most studies investigating current couple behaviors such as communication skills, conflict resolution strategies, and attitudes toward the use of partner violence have typically omitted prospective assessments of developmental psychopathology (see Capaldi & Clark, 1998, for an exception).

Using data from the Children in the Community (CIC) study, a large epidemiological sample of children tracked and assessed at multiple time points for more than 20 years, we tested a developmental model of partner abuse integrating the effects of family violence (childhood maltreatment and exposure to domestic violence), conduct problems, and substance abuse. In short, we sought to determine ways in which earlier risks (e.g., childhood maltreatment) might mediate later ones (adolescent disruptive behavior disorders), the independent effects of major potential risk factors for partner abuse, and whether there are important sex differences in the operation of these risk factors.

On the basis of the previous research and theory just described, we expected that childhood maltreatment, power assertive punishment, and exposure to violence between parents would increase the risk for adult partner violence by placing youth at risk for disruptive behavior disorder by adolescence and substance abuse disorder by their early 20s. Research on the relative timing of childhood maltreatment, exposure to violence between parents, and power assertive punishment is sparse. The prevalence of exposure to domestic violence is higher in young children than in adolescents (Fantuzzo, Boruch, Beriama, Atkins, & Marcus, 1997), and the prevalence of partner violence decreases with age (U.S. Department of Justice, 1995). Thus, one might safely presume that exposure to violence between parents would tend to begin earlier in development and decrease in prevalence in adolescence. The "real" timing of the onset of maltreatment is methodologically difficult to determine in this sample, in that cases of officially identified maltreatment no doubt began well before they came to the attention of authorities, and it would have been extremely difficult to reliably determine whether each episode of abuse or neglect occurred before or after the first episode of exposure to violence between parents. However, because evidence from several well-designed prospective studies suggests that maltreatment (Dodge et al., 1997; Fergusson & Linskey, 1997), power assertive punishment (Cohen & Brook, 1987, 1995), and exposure to violence between parents (Fergusson & Horwood, 1998) predict later behavior problems, we proposed a mediational model with adolescent conduct disorder (CD) appearing after the first onset of these other family risks and accounting for their associations with partner violence.

Finally, we anticipated that in emerging adulthood, the peak risk period for substance abuse disorders (SUDs; Bachman, Johnson, O'Malley, & Schulenberg, 1996; Jessor, Donovan, & Costa, 1991), such symptoms of addiction would operate as a more proximal risk for partner violence by lowering inhibitions and self-constraint during couple conflict and thereby mediate the effects of adolescent CD on the odds of perpetrating and receiving adult partner abuse (Murphy et al., 2001; O'Farrell & Fals-Stewart, 2000). Further, a mediating effect of substance abuse in emerging adulthood might be expected because individuals with histories of

antisocial behavior, who have an increased risk of substance abuse (Brook, Cohen, & Brook, 1998; Dishion, Capaldi, et al., 1995), tend to select romantic partners with similar characteristics (Caspi & Herbener, 1990; Krueger et al., 1998). As developmental studies have not yielded consistent findings on sex differences in predictors of partner abuse (Magdol et al., 1998; Wolfe et al., 1998), we thought it worthwhile to test whether or not a history of family violence, conduct problems, and substance abuse interact with sex.

Method

Participants and Procedure

The CIC cohort derives from a randomly selected sample residing in two upstate New York counties in 1975 (Kogan, Smith, & Jenkins, 1977). Maternal interviews ($N = 975$) were conducted to gather information on a range of health, behavioral, and environmental factors. Eight hundred twenty-one youth and their mothers were retained at subsequent follow-up. This sample as constituted in 1983 was demographically representative of the sampled regions, and retention of study members has been 95% since that time. The youths and their mothers were assessed in three follow-up interviews (1983, 1985–1986, and 1991–1993) regarding demographic, psychiatric, and other psychosocial factors. Interviews were conducted in respondents' homes by intensively trained and supervised lay personnel. Detailed descriptions of the sample characteristics, procedure, and follow-up are available in earlier reports (e.g., Cohen & Cohen, 1996).

In 1999, a questionnaire on recent life changes, work history, aggressive behavior, intimate partner history, and partner violence was mailed to 815 participants known to the study at that time (6 of the 821 were deceased), as part of a study on childhood antecedents of violence. Of these individuals, 582 (71%) returned the questionnaire, 61 (7%) refused to participate, 9 were deceased, we were unable to locate 62 (8%), and 101 (12%) did not return their questionnaires despite repeated requests (nor did they refuse to participate). Within this subsample of 582 respondents, 543 reported that they had had an intimate partner during the past 12 months (93% of the subsample; 66% of the full 821). The remaining 39 reported that they did not have a partner during this period and were excluded from subsequent analyses.

At the Wave 2 interviews in 1983, the mean age of youths was 13.8 years ($SD = 2.6$, range = 9–19). At Wave 3 in 1985–1986, mean age was 16.2 years ($SD = 2.8$, range = 11–22), and at Wave 4 in 1991–1993, mean age was 22.1 years ($SD = 2.7$, range = 17–28). The mean age of respondents who returned the 1999 questionnaire was 31 years ($SD = 2.7$, range = 26–35). The area sampled for this study was selected to be generally representative of the United States in terms of socioeconomic status (SES) and the majority of the demographic variables but reflected the sampled region with regard to the high proportions of Catholic (54%) and Caucasian (91%) participants.

Study procedures met approval by institutional guidelines. Informed consent was obtained from all participants after the interview procedures had been explained. Youths and mothers were interviewed separately, and each interviewer was unaware of the other informant's responses.

Measures

Socioeconomic status. Parental SES was assessed in 1975, 1983, and 1985–1986 as a standardized sum of (a) maternal and paternal years of education, (b) maternal and paternal occupational status, and (c) family income (Hollingshead & Reidlich, 1958). In this study, we employed the SES score from 1985–1986, when offspring were an average of 16 years of age.

Assessment of disorders. The parent and youth versions of the Diagnostic Interview Schedule for Children (Costello, Edelbrock, Duncan, & Kalas, 1984) were administered in 1983 and 1985–1986 to determine the

presence of oppositional defiant disorder (ODD), CD, alcohol abuse, and marijuana abuse. In 1991–1993, young adults were interviewed with a version modified for age appropriateness. Assessments of attention deficit, anxiety, eating, and mood disorders were also made, although we do not report on these disorders for the purposes of the present study. The use of multiple informants increases the reliability and validity of psychiatric diagnoses (Bird, Gould, & Staghezza, 1992; Piacentini, Cohen, & Cohen, 1992); we combined mother and youth reports so that symptoms were considered present if endorsed by either the parent or the child. This “or” rule is based on empirical evidence that both the child and parent contribute unique information to the diagnosis (Loeber, Green, Lahey, & Stouthamer-Loeber, 1990; Zahner, Leckman, Benedict, & Leo-Summers, 1989). To improve on the specificity of the resulting diagnoses, we created a scale for each syndrome based on all of the relevant items, including associated impairment, and assigned “severe” diagnoses to children who scored at least two standard deviations above the population mean. This approach generates better construct validity and prevalences consistent with clinical practice (Cohen et al., 1993; Cohen, Velez, Kohn, Schwab-Stone, & Johnson, 1987; Piacentini et al., 1992). We pooled diagnostic information from the 1983 and 1985–1986 interviews to produce an estimated adolescent (M age = 14.9 years, SD = 1.8) diagnosis. This was accomplished by selecting the data from the wave that was closest to age 15.

Because of the low incidence of each type of SUD diagnosis (Cohen et al., 1993), a dichotomous variable was used to index the presence of any SUDs, of which most were alcohol abuse. An estimated diagnosis at emerging adulthood (M age = 22.0 years, SD = 2.8) was produced with Wave 3 or 4 data in a manner parallel to that just described for the adolescent diagnoses.

Assessment of parenting practices. Scales were derived for both childhood (maternal report) and adolescence (averaged maternal and offspring report). Power assertive punishment (Cohen & Brook, 1987) was estimated at the age of 9 years (childhood) in much the same way as the age-based estimates of psychiatric diagnoses were produced, and the effects of age and year of assessment were removed so that all scores were estimated for age 9. This estimation of scores involved the use of residuals centered on the mean at age 9. Data for childhood estimates came from the 1975 and 1983 interviews. Data for adolescent estimates came from the 1983 and 1985–1986 interviews. An adolescent estimate of power assertive punishment was similarly produced. Adolescent scales included power assertive punishment, maternal inconsistent rule enforcement, autonomy from parents (higher scores reflect poorer supervision and monitoring), and closeness to mother (summary of maternal availability, communication, and support). The validity of these measures has been described in a number of studies (Avgar, Bronfenbrenner, & Henderson, 1977; Cohen & Brook, 1995; Cohen & Cohen, 1996; Kogan et al., 1977; Shaefer, 1965).

Assessment of child maltreatment. Data on child maltreatment were obtained by combining offspring retrospective reports and official record gathering (see Cohen, Brown, & Smailes, 2001, for a complete description of child abuse and neglect classification in this sample). In 1991–1993, offspring were asked to report a retrospective history of child abuse or neglect when they reached majority age. Thus, the sample studied here differed somewhat from the total CIC cohort because some youth were not yet 18 years old. As the questions on child maltreatment represented only a small part of a large protocol, we asked only a few questions, aimed at maximizing specificity (few false positives) at the expense of possibly low sensitivity (high rates of false negatives). Low sensitivity does not significantly bias statistical estimates of rare phenomena in a general population study (Cohen, 1988), although it does reduce statistical power (Cohen et al., 2001).

Respondents were asked (a) whether, during childhood, someone with whom they lived hurt them physically so that they were still injured or bruised the next day, could not go to school or needed medical attention, and if so, how often, and (b) whether any older person (not a boyfriend or girlfriend) ever touched them or played with them sexually or forced them

to touch the older person before they were 18 years old. Sexual abuse was considered to have occurred when two or more such experiences were reported. This approach was used because the question did not differentiate the severity of the abuse or the respondent’s relationship to the perpetrator. A self-report question regarding neglect that asked only about lack of overnight supervision before the age of 10 years was not analyzed because of the small number of positive responses.

Official records on abuse history were obtained in 1994 from the New York State Central Registry (NYSCR). In accordance with state guidelines at the time of the study, the registry retains only those cases reported to official agencies and determined to be valid cases of abuse or neglect. NYSCR staff determined whether records pertaining to the families participating in this study were included in the NYSCR files. Information regarding source of the report, type of abuse, and perpetrator’s relationship to the child was abstracted by Jocelyn Brown, who has extensive experience in the clinical and medical management of officially identified child abuse and neglect. The names were matched to study identification numbers and then removed from the files to maintain participants’ confidentiality. There were 35 officially identified cases of maltreatment: 4 cases of sexual abuse with or without other abuse or neglect, 16 cases of physical abuse with or without neglect, and 15 cases of neglect only. We lack official data on the approximately 25% of the respondents who lived during at least part of their childhood outside of New York State. Thus, the current data are considered a minimum estimate of officially identified cases. Also, because the records were gradually computerized over the 1970s, we may have missed some reported abuse or neglect in the families of older children (i.e., those for whom reports were made before the computerization of record keeping).

We combined the various sources of abuse and neglect based on recent work with this sample (Cohen et al., 2001). First, we combined both self-reported and officially identified physical abuse (with or without other records of abuse or neglect) because such a combination (n = 37) may reflect a more accurate spectrum of severity. Previous work with the present sample indicates that the rates of overlap between self-reported and officially identified abuse and neglect are quite low; only 9 of the officially identified patients self-reported abuse (J. Brown, Cohen, Johnson, & Salzinger, 1998). Second, the neglect group represents only cases of officially identified neglect (n = 14). Third, the number of officially reported cases of sexual abuse was too small to warrant separate analyses. Of the 4 individuals with officially identified sexual abuse, 2 also self-reported and were included in the analysis as self-reported cases. A third case denied sexual abuse but had an official record of physical abuse and was thus included in the physical abuse group. The fourth case did not self-report and was thus removed from the analyses. Our measure therefore represents 19 cases of self-reported sexual abuse. The groups comprised about equal proportions of male and female respondents except in the sexual abuse group, in which 15 of the 19 cases were female. In total, 70 youth in the overall sample of 821 (9%) were classified into one of these types of maltreatment; among the subsample of 543 in the present study, 46 (8%) were classified into one of these maltreatment groups. The remaining 497 participants in the subsample were considered a normal comparison group.

Assessment of parent-to-parent violence. Within a section on partner violence, the questionnaire mailed to respondents in 1999 asked whether the respondent had seen or heard as a child physical fights between his or her parents or between a parent and the parent’s partner (never, once, or two or more times). One hundred forty-nine (26% of those who returned the questionnaire; 25% of the 543 respondents who had a partner) reported some childhood exposure to parent-to-parent physical fights, of whom 80 (14% of all questionnaire respondents; 14% of the 543 respondents who had a partner) reported exposure to two or more incidents. Because the distribution on this variable showed substantial skew, a dichotomous variable was created.

We conducted two validity checks for this retrospective self-report on parent-to-parent violence. First, we tested its association with a question

asked of a subset of respondents' mothers ($n = 627$; 61% of the sample), when respondents were a mean of 22 years old, regarding whether any parent (biological or step) had ever badly injured a romantic partner; 5% ($n = 33$) of the subset of mothers answered affirmatively. The association between these two questions was moderate, Spearman's $r = .27$, $\chi^2(1, N = 627) = 35.52$, $p < .001$. Of mothers who reported that a parent had ever seriously injured a romantic partner, 67% also had an offspring who recalled seeing or hearing a physical fight between his or her parents as a child in the 1999 questionnaire. (The retrospective question about seeing or hearing physical fights between parents was deemed a better measure of exposure to parent-to-parent violence because the question to mothers about injury would have excluded fights recalled by offspring in which physical aggression took place but did not result in injury, and would have included cases occurring before the child's birth, and the sample size for the mothers' injury question would have seriously limited the sample size for our other analyses.)

As a second validity check for the exposure measure, we tested its association with mothers' responses, pooled across Waves 2, 3, and 4, to a query describing discussions of differences in opinion with the child's father figure. The most extreme choice category of that query was "Things get pretty rough between us"; the response choice preceding this one was "We often yell at each other," so the more extreme response may be an index of physically violent conflict resolution. The association between mothers' "rough conflict resolution" response in at least one interview ($n = 26$, 3%) and retrospective offspring reports of seeing or hearing any parent physical fights was significant but low ($r = .14$, $p < .01$); however, it improved when we limited the definition of retrospective exposure to those who saw or heard physical fights at least twice ($r = .24$, $p < .01$). We thus chose the retrospective measure of exposure to at least two incidents of seeing-hearing parent physical fights in our final analyses, because the wording of the item provided a more exact measurement of exposure to parents' partner violence.

Assessment of partner violence. The questionnaire mailed in 1999 asked respondents whether they had had a romantic partner during the past 12 months and, if so, to answer a series of questions about violence to and from a partner drawn from the Conflict Tactics Scale (Straus, 1979). Response rates are listed in Table 1. Participants who denied having a partner during the past year were excluded from the analyses. The scale had good internal consistency (Cronbach $\alpha = .89$).

Using factor-analytic methods sensitive to the impact of infrequently endorsed items, we reduced the traditional two-factor solution to a unitary abusiveness construct (e.g., TenVergert, Kingma, & Gillespie, 1990; Wolfe et al., 2001). Subtler forms of abuse (e.g., threatening) may be less physically injurious than more serious acts (e.g., beating up) but are important from a measurement point of view, because they typically precede and co-occur with more serious forms of abuse (O'Leary et al., 1989). We thus tested the risk for perpetrating and receiving any partner violence without differentiating severity and frequency. We collapsed across all types of partner violence and frequency levels, classifying an individual as perpetrating partner violence if he or she endorsed any act of partner violence perpetration in the past year (22% of the 543 who had a partner) or as being a victim of partner violence if he or she endorsed any act of partner violence victimization during the past year (19% of those with a partner). These rates are consistent with those from other community samples (Magdol et al., 1998a; Straus, 1979; Straus, Gelles, & Steinmetz, 1980).

To examine more serious partner violence seen by clinicians, we also tested a model of risks for perpetrating ($n = 34$; 6%) and receiving ($n = 35$; 6%) injury by the use of any act during the past year. Injury was assessed by asking participants "Did you or a partner of yours receive the following injuries in a fight with each other; cuts, bruises, broken bone or sprains?" and "Did you or a partner of yours require medical attention for injuries received in an argument between you?" Responses were recorded separately for injuries received by the respondent and by the partner.

Table 1
Numbers of Male and Female Respondents Reporting Specific Types of Partner Violence Perpetration and Victimization

Type of act	Female ^a		Male ^b	
	No.	%	No.	%
Physically threaten				
Done by me	20	6	28	11
Done by partner	29	10	26	11
Push, grab, or shove				
Done by me	56	19	46	19
Done by partner	49	16	41	17
Kick, bite, or hit with fist				
Done by me	27	9	11	5
Done by partner	14	5	23	9
Hit or try to hit with object				
Done by me	21	7	6	2
Done by partner	13	4	21	9
Force to have sex				
Done by me	0		4	2
Done by partner	6	2	1	0.4
Injury				
Done by me	22	7	12	5
Done by partner	20	7	15	6
Any perpetration	67	22	51	21
Any victimization	52	17	48	20

^a $n = 298$. ^b $n = 243$.

Results

Descriptive Statistics

Table 1 shows the percentages of men and women who reported each type of partner violence act and injury. The overlap of perpetrators and victims was high but not perfect; 28% ($n = 34$) of those who perpetrated partner violence reported that their partner did not (26% of male and 30% of female perpetrators). When respondents denied perpetrating abuse, they rarely reported receiving abuse (only 4% received abuse without perpetrating it: 5% of male and 2% of female nonperpetrators). The most common form of partner violence was "push, grab, or shove." Injury was reported by less than 10% of men and women. Rates of any perpetration and victimization were relatively similar across the sexes.

Disorder prevalence rates were as follows: adolescent ODD, 4.5% of females ($n = 18$) and 4.6% of males ($n = 19$); adolescent CD, 2.0% of females ($n = 8$) and 5.3% of males ($n = 22$); and emerging adult SUD, 11.5% of females ($n = 45$) and 31.5% of males ($n = 128$). Male respondents had higher rates of CD, $\chi^2(1, N = 811) = 6.19$, $p < .05$, and SUD, $\chi^2(1, N = 796) = 46.72$, $p < .001$, but there were no sex differences in rates of ODD, $\chi^2(1, N = 811) = 0.001$, $p > .10$.

We tested the association between race and the other independent variables because African Americans were of lower SES and exhibited higher rates of parent-to-parent violence, punishment, and conduct disorder (r s ranged from .13–.21, $p < .01$). All of these correlations remained significant even after SES had been controlled. Participants with low SES had higher rates of punishment, maltreatment (any type of abuse or neglect), parent-to-parent violence, and disruptive behavior disorders (r s ranged from .08–.25, $p < .01$). There were moderate relationships among disorders, abuse–neglect, and parent-to-parent violence.

Attrition and Missing Data Issues

A logistic regression analysis with 1999 questionnaire return as the dependent variable indicated that individuals who returned the questionnaire were of higher SES (odds ratio [OR] = 1.50, 95% confidence interval [CI] = 1.24–1.80) and more likely to be female (OR = .43, 95% CI = .31–.61) than those who did not return the questionnaire. They did not differ from refusers in terms of child abuse rates, exposure to violence between parents, parenting scores, or emerging adult substance abuse rates. They were, however, less likely than refusers to have a diagnosis of either CD or ODD in adolescence (5.0% vs. 11.0%), $\chi^2(1, N = 821) = 9.82$, $p < .01$.

We used the SAS Multiple Imputation program to estimate, for the entire sample ($N = 821$), the prevalence of partner violence perpetration and victimization, injuries to and from a partner, and key risk factors. On the basis of averaged scores from five imputed data sets, the following prevalences were obtained: partner violence perpetration, 24.2%; partner violence victimization, 20.3%; injury of a partner, 5.7%; injury from a partner, 6.4%; exposure to violence between parents, 15.7%; child physical or sexual abuse, 7.0%; adolescent CD or ODD, 6.7%; and emerging adult SUD, 21%.

Model Results

Perpetrating any partner violence. Using logistic regression, we first obtained unadjusted ORs and 95% CIs for each risk factor (net of demographic factors). That is, we regressed any partner

violence perpetration in the past year, controlling first for age, parental SES, race, and sex, on maternal power assertive punishment in childhood, maternal parenting of the adolescent (maternal inconsistency, closeness, autonomy, and power assertive punishment), three types of maltreatment (physical abuse, sexual abuse, and neglect), ODD, CD, SUD, interactions by sex, and interactions of CD with maltreatment, exposure to parent-to-parent violence, and SUD. We limited analyses to respondents who reported having a partner in the past year.

When testing the effects of the three maltreatment types, we entered them simultaneously, controlling for demographic factors, so that the contribution of each type would control for the effects of the other three types. Similar effects and ORs emerged for any partner violence perpetration in the case of physical abuse (OR = 2.51, 95% CI = 0.95–6.59) and sexual abuse (OR = 1.62, 95% CI = 0.53–4.92) but not neglect. We therefore combined the two types of child abuse in subsequent model testing to maximize power, because the data were sparse for each specific type of abuse. We included a dichotomous variable indicating missing data on childhood abuse–neglect in the block with child abuse to adjust for the effect of missing data among those under the age of 18 years at the time self-report data were collected. This missing data variable was not significant for this model or for any of the models described subsequently.

The ORs for perpetrating any partner violence revealed several noteworthy points (Table 2). First, SES was the only significant demographic risk factor, with about a 20% decline in the risk for partner violence for each one standard deviation increase in SES.

Table 2
Hierarchical Logistic Regression Model Predicting Any Violence to Partner

Risk factor	Any violence to partner		Adjusted odds ratio (95% confidence interval)	
	No ($n = 423$)	Yes ($n = 118$)	Net of demographics	Net of other risks
Block 1: Demographic factors				
Sex ^a (%)				1.19 (0.74–1.90)
Female	78	22		
Male	79	21		
Mean socioeconomic status (<i>SD</i>)	10.14 (1.00)	9.91 (0.90)		0.92 (0.71–1.20)
Race ^b (%)				0.58 (0.23–1.46)
African American	73	27		
European American	79	21		
Mean age (years) (<i>SD</i>)	31.00 (2.67)	31.00 (3.00)		1.07 (0.98–1.18)
Block 2: Risks with childhood onset				
Physical or sexual abuse (%)	6	11	2.14 (1.02–4.53)*	1.20 (0.52–2.77)
Neglect (%)	2	0	0.002 (0–> 100)	
Violence between parents (%)	10	26	2.96 (1.72–5.09)**	2.34 (1.29–4.26)**
Mean punishment level (<i>SD</i>)	4.53 (1.64)	5.04 (1.64)	1.21 (1.06–1.38)	1.18 (1.02–1.37)*
Block 3: Adolescent risks				
Conduct disorder (%)	1	7	7.23 (2.11–24.75)**	4.00 (1.08–14.85)*
Mean closeness to mother score (<i>SD</i>)	71.16 (9.76)	67.84 (10.75)	0.97 (0.96–0.99)**	0.98 (0.96–1.00)
Mean maternal inconsistency score (<i>SD</i>)	8.11 (2.59)	8.42 (2.83)	1.05 (0.97–1.13)	
Mean autonomy score (<i>SD</i>)	12.51 (3.82)	12.55 (3.79)	1.01 (0.95–1.06)	
Mean punishment level ^c (<i>SD</i>)	3.09 (1.54)	3.41 (1.46)	1.20 (1.04–1.38)*	
Block 4: Emerging adult substance use disorder (%)				
	21	26	1.40 (0.93–8.52)†	1.20 (0.69–2.08)

Note. Continuous variables are represented by means and categorical variables are represented by percentage within each level of the dependent variable that had the risk factor.

^a Reference category is female. ^b Reference category is European American. ^c Not included in consolidated model owing to collinearity with childhood punishment, $r(816) = .42$, $p < .01$.

† $p < .10$ (marginally significant). * $p < .05$. ** $p < .01$.

Second, of the parenting variables, only punishment and maternal closeness in adolescence were significant. Third, a diagnosis of CD was the greatest risk, increasing the odds of perpetrating partner violence sevenfold. Fourth, childhood abuse doubled the odds of any violence toward one's partner. Exposure to parent-to-parent violence tripled the odds for any violence toward one's partner. Fifth, emerging adult SUD was marginally related to partner violence perpetration ($p = .07$). Finally, no sex differences were obtained in relationships between risk factors and partner violence.

Next, we estimated a consolidated hierarchical logistic regression model including only those main effects that were statistically significant, again controlling for demographic factors ($p < .05$). The final model summary, ORs and 95% CIs are described in Table 2. Blocks of variables were entered according to the developmental stage at which they were estimated to first appear, as follows: demographic factors, risk factors with an estimated onset in childhood (child abuse, exposure to violence between parents, and childhood punishment), adolescent risk factors (parenting and disruptive disorders), and emerging adult substance abuse. The results of each block represent estimates net of every other variable in the consolidated model. Although ODD was related to partner violence perpetration net of demographic factors (OR = 3.52, 95% CI = 1.42–8.75, $p < .01$), we did not include it in the consolidated model, nor did we combine it with CD, because its effect was no longer significant once we controlled for all of the other risk factors (except CD) with significant unadjusted ORs. Childhood punishment, exposure to violence between parents, and adolescent

CD each made significant, independent contributions to risk for partner violence. Childhood physical or sexual abuse was no longer significant after adolescent measures of CD, maternal closeness, and violence between parents had been controlled. Because emerging adult substance abuse was marginally related to partner violence, we included it in the model to test whether it might partially mediate the effects of CD. The mediational effect was small; the adjusted ORs for CD were 4.35 (95% CI = 1.20–15.83) and 4.00 (95% CI = 1.08–14.85), respectively, before and after the addition of substance abuse.

Receiving any partner violence. In unadjusted regressions, power assertive punishment and exposure to violence between parents were significant risks in childhood, and CD and low mother–adolescent closeness were risks in adolescence. However, in the consolidated model (see Table 3), only violence between parents made an independent contribution, with low mother–adolescent closeness approaching significance. Once violence between parents was introduced into the model, the effects of punishment and CD were substantially reduced.

Injury to partner. Hierarchical logistic regression predicting injury to a partner ($n = 34$) yielded results that resembled those for any perpetration of partner violence, with some notable differences. As with the model testing for any perpetration of partner violence, we first ran unconsolidated models for each risk factor, testing whether each was significantly associated with partner injury, that is, without controlling for all of the other hypothesized risks. Of the childhood abuse and neglect variables, we included only physical abuse in the consolidated model, because it was the

Table 3
Hierarchical Logistic Regression Model Predicting Any Violence From Partner

Risk factor	Any violence from partner		Odds ratio (95% confidence interval)	
	No ($n = 441$)	Yes ($n = 100$)	Net of demographics	Net of other risks
Block 1: Demographic factors				
Sex ^a (%)			1.17 (0.75–1.80)	1.22 (0.77–1.94)
Female	83	17		
Male	80	20		
Mean socioeconomic status (<i>SD</i>)	10.15 (1.00)	9.84 (0.85)	0.78 (0.63–0.97)*	0.82 (0.63–1.05)
Race ^b (%)			1.30 (0.51–3.31)	1.54 (0.58–4.05)
African American	84	16		
European American	82	18		
Mean age (years) (<i>SD</i>)	31.02 (2.69)	31.07 (3.03)	1.01 (0.93–1.10)	1.01 (0.93–1.10)
Block 2: Risks with childhood onset				
Physical abuse (%)	3	7	2.21 (0.81–6.01)	
Sexual abuse (%)	3	1	0.92 (0.25–3.38)	
Neglect (%)	2	0	0.003 (0–> 100)	
Mean punishment level (<i>SD</i>)	4.55 (1.64)	5.02 (1.64)	1.17 (1.02–1.34)*	1.13 (0.98–1.30)
Violence between parents (%)	11	27	3.01 (1.71–5.29)**	2.68 (1.49–4.82)**
Block 3: Adolescent risks				
Conduct disorder (%)	1	6	4.00 (1.20–12.85)*	2.36 (0.69–8.03)
Mean closeness to mother score (<i>SD</i>)	71.09 (9.72)	67.56 (11.08)	0.97 (0.95–0.99)**	0.98 (0.96–1.00)†
Mean maternal inconsistency score (<i>SD</i>)	8.10 (2.62)	8.51 (2.73)	1.06 (0.97–1.15)	
Mean autonomy score (<i>SD</i>)	12.45 (3.80)	12.84 (3.86)	1.03 (0.97–1.09)	
Mean punishment level ^c (<i>SD</i>)	3.09 (1.54)	3.47 (1.47)	1.16 (0.999–1.34)†	
Block 4: Emerging adult substance use disorder (%)				
	21	29	1.53 (0.90–2.59)	

Note. Continuous variables are represented by means, and categorical variables are represented by percentages within each level of the dependent variable that had the risk factor.

^a Reference category is female. ^b Reference category is European American. ^c Not included in consolidated model owing to collinearity with childhood punishment, $r(816) = .42$, $p < .01$.

† $p < .10$ (marginally significant). * $p < .05$. ** $p < .01$.

only one with a significant independent effect on partner injury risk, net of the demographic factors and other types of maltreatment (OR = 6.07, 95% CI = 1.96–18.77). The demographics-adjusted odds of perpetrating injury were significant for childhood physical abuse and exposure to violence between parents and for maternal closeness and CD in adolescence. Table 4 shows the final consolidated model including all blocks of risk factors. When these factors were entered simultaneously, the effect of physical abuse was still high but was somewhat reduced. Although not shown as a result of space limitations, CD remained significant after adjustment for demographics, violence between parents, and adolescent closeness to mother (adjusted OR = 5.02, 95% CI = 1.13–22.35) but was mediated by emerging adult SUD (adjusted OR = 3.73, 95% CI = 0.81–17.19). There were no interactions among risk factors.

Injury by partner. The odds for receiving injury ($n = 35$), adjusted only for demographic factors, were significant for exposure to violence between parents, physical abuse, and adolescent CD. (Again, unconsolidated models indicated that only physical abuse was related to injury by a partner; thus, the other types of maltreatment were not included in the consolidated model.) Table 5 shows that the consolidated hierarchical logistic regression model yielded significant effects only for physical abuse, with marginal effects for violence between parents and CD. The strongest effects were those for physical abuse and CD.

Discussion

This study employed a community sample to test the relative contributions of childhood disruptive behavior disorders, child

abuse and neglect, parenting behaviors, and parent-to-parent violence to risk for partner violence in early adulthood. We expected that childhood maltreatment, power assertive punishment, and exposure to violence between parents would each increase the risk for adult partner violence by placing youths at risk for disruptive behavior disorder by adolescence and for substance abuse disorder by the early 20s. We anticipated that CD in adolescence would mediate the associations between partner violence and these earlier family risk factors. Finally, we predicted that substance abuse in one's early 20s would mediate the effect of adolescent CD on risk for partner violence.

Results for predictions of perpetrating violence to partners support and extend Magdol et al.'s (1998a) and Capaldi and Clark's (1998) findings that childhood behavior problems are among the most robust predictors of such violence. CD does indeed appear to mediate the effect of child abuse. However, exposure to violence between parents and punishment remained potent predictors even after the introduction of CD into the model. Punishment from mothers may serve as a model for physical expression of anger. This acceptance of coercive, power-based norms as ways of regulating conflict may have direct implications for young adults' means of conflict resolution with partners, independent of a disruptive behavior disorder. The present findings are consistent with a social learning model of partner violence. Although CD mediates the effect of incidents of child abuse, it appears that it is not necessary to develop CD in order for early family lessons of coercive, aggressive conflict resolution within intimate relationships to generalize to youths' own intimate relationships. In addition, our findings are not inconsistent with behavior-genetics pro-

Table 4
Hierarchical Logistic Regression Model Predicting Injury to Partner

Risk factor	Injury to partner		Odds ratio (95% confidence interval)	
	No ($n = 507$)	Yes ($n = 34$)	Net of demographics	Net of other risks
Block 1: Demographic factors				
Sex ^a (%)				0.59 (0.25–1.40)
Female	93	7		
Male	95	5		
Mean socioeconomic status (<i>SD</i>)	10.12 (0.98)	9.63 (0.87)		0.76 (0.50–1.16)
Race ^b (%)				0.50 (0.16–1.57)
African American	86	14		
European American	94	6		
Mean age (years) (<i>SD</i>)	31.07 (2.76)	30.84 (2.71)		0.98 (0.85–1.13)
Block 2: Risks with childhood onset				
Physical abuse (%)	3	18	6.07 (1.96–18.77)**	4.77 (1.39–16.30)*
Neglect (%)	2	0	0.002 (0– > 100)	
Violence between parents (%)	12	35	3.11 (1.41–6.88)**	2.02 (0.82–4.94)
Mean punishment level (<i>SD</i>)	4.61 (1.65)	5.12 (1.62)	1.23 (0.98–1.54)	
Block 3: Adolescent risks				
Conduct disorder (%)	2	12	8.99 (1.38–58.62)*	3.73 (0.81–17.19)†
Mean closeness to mother score (<i>SD</i>)	40.83 (9.75)	64.51 (12.71)	0.95 (0.92–0.98)**	0.96 (0.93–0.99)*
Mean maternal inconsistency score (<i>SD</i>)	8.15 (2.64)	8.51 (2.63)	1.08 (0.95–1.23)	
Mean autonomy score (<i>SD</i>)	12.52 (3.82)	12.41 (3.72)	1.01 (0.92–1.12)	
Mean punishment level (<i>SD</i>)	3.13 (1.53)	3.59 (1.50)	1.18 (0.95–1.48)	
Block 4: Emerging adult substance use disorder^c (%)				
	22	35	2.82 (0.93–8.52)†	2.14 (0.87–5.29)

Note. Continuous variables are represented by means, and categorical variables are represented by percentages within each level of the dependent variable who had the risk factor.

^a Reference category is female. ^b Reference category is European American. ^c Adjusted odds ratio for conduct disorder before adding substance use disorder was 5.05 (95% confidence interval = 1.14–22.46, $p < .05$).

† $p < .10$ (marginally significant). * $p < .05$. ** $p < .01$.

Table 5
Hierarchical Logistic Regression Model Predicting Injury by Partner

Risk factor	Injury by partner		Odds ratio (95% confidence interval)	
	No (<i>n</i> = 506)	Yes (<i>n</i> = 35)	Net of demographics	Net of other risks
Block 1: Demographic factors				
Sex ^a (%)				0.95 (0.45–2.01)
Female	93	7		
Male	94	6		
Mean socioeconomic status (<i>SD</i>)	10.12 (0.98)	9.67 (0.88)		0.75 (0.50–1.11)
Race ^b (%)				0.80 (0.24–2.63)
African American	89	11		
European American	94	6		
Mean age (years) (<i>SD</i>)	31.01 (2.75)	31.67 (2.82)		1.14 (0.999–1.31)†
Block 2: Risks with childhood onset				
Physical abuse (%)	3	11	4.10 (1.16–14.50)*	3.56 (0.998–12.72)*
Sexual abuse (%)	4	3	0.94 (0.12–7.64)	
Neglect (%)	2	0	0.003 (0– > 100)	
Violence between parents (%)	12	31	2.81 (1.25–6.32)*	2.26 (0.97–5.26)†
Mean punishment level (<i>SD</i>)	4.61 (1.64)	5.17 (1.72)	1.22 (0.98–1.52)†	
Block 3: Adolescent risks				
Conduct disorder (%)	2	9	4.57 (1.14–18.28)*	3.44 (0.81–14.60)†
Mean closeness to mother score (<i>SD</i>)	70.68 (9.90)	66.83 (11.92)	0.97 (0.94–1.00)†	
Mean maternal inconsistency score (<i>SD</i>)	8.16 (2.64)	8.35 (2.76)	1.03 (0.90–1.17)	
Mean autonomy score (<i>SD</i>)	12.52 (3.77)	12.46 (4.45)	1.00 (0.91–1.09)	
Mean punishment level (<i>SD</i>)	3.12 (1.52)	3.69 (1.50)	1.23 (0.98–1.54)†	
Block 4: Emerging adult substance use disorder (%)				
	22	31	1.74 (0.77–3.90)	

Note. Continuous variables are represented by means, and categorical variables are represented by percentages within each level of the dependent variable who had the risk factor.

^a Reference category is female. ^b Reference category is European American.

†*p* < .10 (marginally significant). **p* < .05.

cesses, particularly in regard to the genetic similarity of partner violence and antisocial behavior as underlying personality and emotional dispositions (Moffitt, Krueger, Caspi, & Fagan, 2000). Finally, contrary to our predictions, emerging adult substance abuse did not mediate the effect of adolescent CD on partner violence risk. Thus, the risk posed by substance abuse found in studies of adults involved in abusive relationships (see Chalk & King, 1998, for a review) may operate as a more concurrent factor in adulthood, rather than as an earlier risk. Another possible reason why an association was not found between substance use in emerging adulthood and subsequent violence toward a partner is that high levels of substance use are relatively normative in young adulthood.

In models predicting receiving any violence from a partner, we were surprised to find that child abuse was not a significant risk after controlling for demographic factors, and once we introduced exposure to violence between parents and punishment into the same block of childhood predictors with child abuse, the subsequent inclusion of CD was no longer significant. Thus, exposure to violence between parents, which probably begins when a child is young (Fantuzzo et al., 1997), seems to pose the greatest independent risk for being the victim of any act of partner violence.

Of additional interest is the finding that the other parenting factors investigated here, including maternal inconsistency and high rates of autonomy from parents, have shown strong effects on the risk for childhood disruptive disorders in other studies involving this sample (Johnson, Cohen, Kasen, Smailes, & Brook, 2001) but were not directly associated with partner violence perpetration or victimization. Antisocial behavior and partner violence appear

to be partially overlapping but distinct phenomena, consistent with other recent findings (Moffitt et al., 2000).

Findings in regard to injury perpetration differed from those for any partner violence perpetration, most notably because the strong effects of physical abuse were shown even after controlling for CD. A history of physical injury by a caretaker appears to directly increase the odds of using similar tactics of conflict resolution in close relationships. Further, low mother–adolescent closeness increased the risk for partner injury, independent of adolescent CD. CD did increase the odds of injury to a partner almost fivefold, and subsequent substance abuse in one's early 20s mediated the effects of adolescent CD on risk for injury perpetration. One possible reason for the association of substance abuse and violence toward a partner is assortative mating of individuals with a history of substance abuse or antisocial behavior.

The results in regard to predicting injury by partners again point to the direct effect of childhood physical abuse. CD was elevated in those who were injured by a partner, but the effect of developing CD did not seem to alter the direct impact of an experience of physical abuse. Here, however, substance abuse in one's early 20s did not mediate the effect of CD on risk for injury by a partner. Some have suggested that substance abuse may be a coping mechanism for those exposed to injurious levels of partner violence (for a review, see Chalk & King, 1998); perhaps our results reflect this trajectory.

Although we observed some differences in the pattern of findings for victimization versus perpetration of partner violence, these differences arose from the handful of cases with one-sided violence and apply to them. Such findings would have to be based on

the individuals who were victims but not perpetrators (4%; approximately 20 cases) and the small number of individuals (28%; 34 cases) who were perpetrators but not victims. All of the other participants would have generated identical findings for perpetration and victimization, because they scored the same on both outcomes and predictors.

Prevention Implications

Who should be targeted? Secondary partner violence prevention programs may be warranted for children with CD, those exposed to parents' violence, or those who receive excessive punishment, each for different reasons. Children with a history of maltreatment may benefit from interventions targeting the escalation of any behavior problems, in that the development of CD increases risk for involvement in violent intimate relationships. Children exposed to violence between parents are good candidates for prevention, because they may be especially vulnerable to social learning of the effectiveness of violence as a means of influence and conflict management in close relationships (Jouriles, Norwood, et al., 2001; O'Leary, 1988). Prevention programs for children could be tied to services offered in battered women's shelters, to police intervention for domestic violence calls, or to family court orders of protection for domestic violence.

What age range? Some suggest that partner violence prevention should begin as early as adolescence (Avery-Leaf, Cascardi, O'Leary & Cano, 1997; Magdol et al., 1998a). Our results support starting even earlier. If families are targeted before children reach late childhood, patterns of excessive punishment may be prevented from becoming entrenched and later reproduced in adolescents' fledgling romantic relationships. Clinical experience indicates that parents' patterns of excessive punishment are very difficult to change by the time children reach adolescence. Parents who resort to such punishment experience high levels of conflict, hostility, and hopelessness. Also, by adolescence, parents who use such extreme punishment may have trained their adolescents to respond only to extreme, coercive forms of punishment, to the exclusion of less excessive tactics.

What should be included in prevention programs? The few tested prevention programs have targeted middle or high school students' attitudes toward partner violence and help-seeking behaviors, stressing males' exclusive responsibility for abusive behavior (e.g., Avery-Leaf et al., 1997; Wolfe, Wekerle, & Scott, 1997). Our findings and those of others indicate that both males and females who were abused as children or conduct disordered as adolescents are also at risk for partner violence. Preventing and treating CD may be a major key to preventing partner violence. Because maltreatment is known to increase the risk for CD, a focus on maltreatment early in life may stem the trajectory of antisocial behavior across the life span and prevent later incidents of injurious partner violence. A striking finding was the absence of sex differences in predictors of partner violence. These results are consistent with those observed elsewhere (e.g., Magdol et al., 1998a) and argue for the need to include both females and males in our partner violence prevention efforts. Studies with larger sample sizes will be needed to definitively establish whether sex differences exist in the population; at this time, however, the exclusive focus on males' risk factors is not supported. Preventing women's partner violence as well as men's may be necessary to

prevent adverse consequences of partner violence for women (Moffitt, Robins, & Caspi, in press). Also, focusing exclusively on youths' behavior will probably not be enough to prevent partner violence. Instead, our results support the inclusion of parent training, starting when children are young, with a strong emphasis on changing patterns of excessive punishment. Further, conflict resolution training among parents may reduce interparent violence and children's exposure to it. Early intervention for violence between young parents may aid its prevention in future generations.

Study Strengths and Limitations

The present study is strengthened by its use of an unselected sample of young men and women followed for more than 20 years and assessed at multiple time points on a wide range of measures. Also, this study represents just the type of cross-problem research requested by the National Research Council (Chalk & King, 1998), with its integrated examination of partner violence, childhood maltreatment, disruptive behavior disorders, and childhood exposure to domestic violence. Limitations include use of a single informant for partner violence assessment, over a limited time period, perhaps resulting in underreporting of these events, although we were careful to include only individuals who were involved in a relationship in the time frame of interest. Some researchers conducting studies based on representative, cross-sectional data have questioned the adequacy of using one partner's report for assessing physical aggression toward a partner (Schafer, Caetano, & Clark, 2002; Szinovacs & Egley, 1995). On the other hand, Moffitt et al.'s (1997) study of a prospectively followed birth cohort showed that partners' reports tend to agree very well, suggesting that one reporter can be sufficient for research purposes, particularly in a longstanding longitudinal epidemiological study such as this one. In fact, participants involved in longitudinal research report more than new participants naive to research on measures known to be affected by social desirability, including partner violence, suggesting greater trust in confidentiality (Poulton, Moffitt, Caspi, Walker, & Milne, 2002).

A second limitation is that retrospective measurement of parent-to-parent violence may have limited the validity and reliability of these reports, although they were partially validated with maternal prospective reports. A related limitation of the retrospective measure of parent-to-parent violence is that it was collected at the same time as the measure of partner-to-partner violence. This may have resulted in an inflated association between the two. Third, we did not collect data on the nature of the respondents' relationship (dating, cohabitation, or marriage), which some have shown to relate to risk for partner violence (Magdol et al., 1998b).

Fourth, the current study aimed to investigate several key childhood risks for partner violence, but other processes, such as the role of peers at various developmental stages, may also be important (e.g., Capaldi et al., 2001). Fifth, to some extent, the direct effects of risks for partner violence (e.g., physical abuse) may have been carried by a small number of cases, because the number of respondents with risk factors was small and there was a moderate amount of overlap among the risk factors. Sixth, our failure to find sex differences in developmental processes leading to partner violence may have been a result of a lack of power to detect differences rather than the true absence of such differences in the

population. Further studies will be necessary to answer the sex difference question decisively. Finally, our data could not differentiate levels of exposure (e.g., frequency or severity of acts witnessed and age at exposure), but they support further prospective research in this area with unselected samples of youth. The exact timing of each form of family violence (abuse, neglect, and exposure to domestic violence) would have been extremely difficult to establish. As such, the present mediational model should be considered the best possible approximation. To our knowledge, no prospective longitudinal data set will be able to definitively answer questions about the relative timing of these forms of family violence, as well their effects on partner violence risk, for many years to come.

Our findings from this 20-year prospective study suggest that childhood behavior problems are among the most robust predictors of partner violence, that CD appears to mediate the effect of child abuse, and that exposure to violence between parents and power assertive punishment during childhood significantly increase the risk for using violent conflict resolution within intimate relationships. In the case of partner violence that results in injury, physical abuse and CD confer strong, independent risks. Partner violence prevention programs for youth with such risk patterns seem warranted, particularly because partner violence remains highly resistant to treatment in adulthood.

References

- Avery-Leaf, S., Cascardi, M., O'Leary, K. D., & Cano, A. (1997). Efficacy of a dating violence prevention program on attitudes justifying aggression. *Journal of Adolescent Health, 21*, 11–17.
- Avgar, A., Bronfenbrenner, U., & Henderson, C. R. (1977). Socialization practices of parents, teachers, and peers in Israel: Kibbutz, moshav, and city. *Child Development, 48*, 1219–1227.
- Bachman, J. G., Johnson, L. D., O'Malley, P., & Schulenberg, J. (1996). Transitions in drug use during late adolescence and young adulthood. In J. A. Graber, J. Brooks-Gunn, & A. C. Peterson (Eds.), *Transitions through adolescence: Interpersonal domains and context* (pp. 111–140). Mahwah, NJ: Erlbaum.
- Bird, H. R., Gould, M., & Staghezza, B. (1992). Aggregating data from multiple informants in child psychiatry epidemiological research. *Journal of the American Academy of Child and Adolescent Psychiatry, 31*, 78–85.
- Bowlby, J. (1969). *Attachment*. New York: Basic Books.
- Brook, J. S., Cohen, P., & Brook, D. W. (1998). Longitudinal study of co-occurring psychiatric disorders and substance use. *Journal of the American Academy of Child and Adolescent Psychiatry, 37*, 322–330.
- Brown, B. B. (1999). "You're going out with who?": Peer group influence on adolescent romantic relationships. In W. Furman, B. B. Brown, & C. Feiring (Eds.), *The development of romantic relationships in adolescence* (pp. 291–329). New York: Cambridge University Press.
- Brown, J., Cohen, P., Johnson, J. G., & Salzinger, S. (1998). A longitudinal analysis of risk factors for child maltreatment: Findings from a seventeen-year prospective study of self-reported and officially recorded child abuse and neglect. *Child Abuse and Neglect, 22*, 1065–1078.
- Capaldi, D. M., & Clark, S. (1998). Prospective family predictors of aggression toward female partners for at-risk young men. *Developmental Psychology, 34*, 1175–1188.
- Capaldi, D. M., Dishion, T. J., Stoolmiller, M., & Yoerger, K. (2001). Aggression toward female partners by at-risk young men: The contribution of male adolescent friendships. *Developmental Psychology, 37*, 61–73.
- Carlson, E., & Sroufe, A. (1995). Contribution of attachment theory to developmental psychopathology. In D. Cicchetti & D. Cohen (Eds.), *Developmental psychopathology: Vol. 1. Theory and methods* (pp. 581–617). New York: Wiley.
- Caspi, A., & Herbener, E. S. (1990). Continuity and change: Assortative mating and the consistency of personality in adulthood. *Journal of Personality and Social Psychology, 58*, 250–258.
- Chalk, R., & King, P. A. (1998). *Violence in families: Assessing prevention and treatment programs*. Washington, DC: National Academy Press.
- Cohen, P. (1988). The effect of instruments and informants on ascertainment. In D. L. Dunner, E. S. Gershon, & J. E. Barrett (Eds.), *Relatives at risk for mental disorder* (pp. 31–52). New York: Raven Press.
- Cohen, P., & Brook, J. S. (1987). Family factors related to the persistence of psychopathology in childhood and adolescence. *Psychiatry, 50*, 332–345.
- Cohen, P., & Brook, J. S. (1995). The reciprocal influence of punishment and child behavior disorder. In J. McCord (Ed.), *Coercion and punishment in long-term perspectives* (pp. 154–164). New York: Cambridge University Press.
- Cohen, P., Brown, J., & Smailes, E. (2001). Child abuse and neglect and the development of mental disorders in the general population. *Development and Psychopathology, 13*, 981–999.
- Cohen, P., & Cohen, J. (1996). *Life values and adolescent mental health*. Mahwah, NJ: Erlbaum.
- Cohen, P., Cohen, J., Kasen, S., Velez, C. N., Hartmark, C., Johnson, J., et al. (1993). An epidemiological study of disorders in late childhood and adolescence—I. Age- and gender-specific prevalence. *Journal of Child Psychology and Psychiatry, 34*, 851–867.
- Cohen, P., Velez, C. N., Kohn, M., Schwab-Stone, M., & Johnson, J. (1987). Child psychiatric diagnosis by computer algorithm: Theoretical issues and empirical tests. *Journal of the American Academy of Child and Adolescent Psychiatry, 26*, 631–638.
- Connolly, J., & Goldberg, A. (1999). Romantic relationships in adolescence: The role of friends and peers in their emergence and development. In W. Furman, B. B. Brown, & C. Feiring (Eds.), *The development of romantic relationships in adolescence* (pp. 266–290). New York: Cambridge University Press.
- Costello, E. J., Edelbrock, C. S., Duncan, M. K., & Kalas, R. (1984). *Testing of the NIMH Diagnostic Interview Schedule for Children (DISC) in a clinic population: Final report to the Center for Epidemiological Studies, NIMH*. Pittsburgh, PA: University of Pittsburgh.
- Dishion, T. J., Andrews, D. W., & Crosby, L. (1995). Antisocial boys and their friends in adolescence: Relationship characteristics, quality, and interactional processes. *Child Development, 66*, 139–151.
- Dishion, T. J., Andrews, D. W., Kavanagh, K., & Soberman, L. H. (1996). Preventive interventions for high-risk youth: The Adolescent Transitions Program. In R. DeV. Peters & R. McMahon (Eds.), *Preventing childhood disorders, substance abuse, and delinquency* (pp. 184–214). Thousand Oaks, CA: Sage.
- Dishion, T. J., Capaldi, D. M., Spracklen, K. M., & Li, F. (1995). Peer ecology of male adolescent drug use. *Development and Psychopathology, 7*, 803–824.
- Dishion, T. J., Eddy, J. M., Haas, E., Li, F., & Spracklen, K. (1997). Friendships and violent behavior during adolescence. *Social Development, 6*, 207–225.
- Dishion, T. J., Patterson, G. R., Stoolmiller, M., & Skinner, M. L. (1991). Family, school, and behavioral antecedents to early adolescent involvement with antisocial peers. *Developmental Psychology, 27*, 172–180.
- Dodge, K. A. (1983). Behavioral antecedents: A peer social status. *Child Development, 54*, 1386–1399.
- Dodge, K. A., Bates, J. E., & Pettit, G. S. (1990). Mechanisms in the cycle of violence. *Science, 250*, 1678–1683.
- Dodge, K. A., Pettit, G. S., & Bates, J. E. (1997). How the experience of early physical abuse leads children to become chronically aggressive. In D. Cicchetti & S. Toth (Eds.), *Rochester Symposium on Developmental*

- Psychopathology: Vol. 8. The effects of trauma on the developmental process* (pp. 263–268). Rochester, NY: University of Rochester Press.
- Dodge, K. A., & Price, J. M. (1994). On the relation between social information processing and socially competent behavior in early school-age children. *Child Development, 65*, 1385–1399.
- Downey, G., & Feldman, S. (1996). Implications of rejection sensitivity for intimate relationships. *Journal of Personality and Social Psychology, 70*, 1327–1343.
- Dunford, F. W. (2000). The San Diego Navy Experiment: An assessment of interventions for men who assault their wives. *Journal of Consulting and Clinical Psychology, 68*, 468–476.
- Ehrensaft, M. K., Wasserman, G. A., Verdelli, H., Greenwald, S., Miller, L. S., & Davies, M. (in press). Maternal antisocial behavior, parenting practices and behavior problems in boys at risk for antisocial behavior. *Journal of Child and Family Studies*.
- Fantuzzo, J., Boruch, R., Beriama, A., Atkins, M., & Marcus, S. (1997). Domestic violence and children: Prevalence and risk in five major U.S. cities. *Journal of the American Academy of Child and Adolescent Psychiatry, 36*, 116–122.
- Feiring, C., & Furman, W. C. (2000). When love is just a four letter word: Victimization and romantic relationships in adolescence. *Child Maltreatment, 5*, 293–298.
- Fergusson, D. M., & Horwood, L. J. (1998). Exposure to interparental violence in childhood and psychosocial adjustment in young adulthood. *Child Abuse and Neglect, 22*, 339–357.
- Fergusson, D. M., & Linskey, M. T. (1997). Physical punishment/maltreatment during childhood and adjustment in young adulthood. *Child Abuse and Neglect, 21*, 617–630.
- Gilliom, M., Shaw, D. S., Beck, J. E., Schonberg, M. A., & Lukon, J. L. (2002). Anger regulation in disadvantaged preschool boys: Strategies, antecedents, and the development of self-control. *Developmental Psychology, 38*, 222–235.
- Hartup, W. W. (1996). The company they keep: Friendships and their developmental significance. *Child Development, 67*, 1–13.
- Hollingshead, A. B., & Reidlich, F. C. (1958). *Social class and mental illness: A community study*. New York: Riley.
- Holtzworth-Munroe, A., & Stuart, G. L. (1994). Typologies of male batterers: Three subtypes and the differences among them. *Psychological Bulletin, 116*, 476–497.
- Jessor, R., Donovan, J. E., & Costa, F. M. (1991). *Beyond adolescence: Problem behavior and young adult development*. New York: Cambridge University Press.
- Johnson, J. G., Cohen, P., Kasen, S., Smailes, E., & Brook, J. (2001). Association of maladaptive parental behavior with psychiatric disorder in parents and their offspring. *Archives of General Psychiatry, 58*, 453–460.
- Jouriles, E. N., McDonald, R., Norwood, W. D., & Ezell, E. (2001). Issues and controversies in documenting the prevalence of children's exposure to domestic violence. In S. A. Graham-Bermann & J. L. Edleson (Eds.), *Domestic violence in the lives of children: The future of research, intervention, and social policy* (pp. 12–34). Washington, DC: American Psychological Association.
- Jouriles, E. N., Norwood, W. D., McDonald, R., & Peters, B. (2001). Domestic violence and child adjustment. In J. Grych & F. Fincham (Eds.), *Interparental conflict and child development: Theory, research, and applications* (pp. 315–336). Cambridge, England: Cambridge University Press.
- Kogan, L. S., Smith, J., & Jenkins, S. (1977). Ecological validity of indicator data as predictors of survey findings. *Journal of Social Service Research, 1*, 117–132.
- Kopp, C. B. (1989). Regulation of distress and negative emotions: A developmental view. *Developmental Psychology, 25*, 343–354.
- Krueger, R. F., Moffitt, T. E., Caspi, A., Bleske, A., & Silva, P. (1998). Assortative mating for antisocial behavior: Developmental and methodological implications. *Behavior Genetics, 28*, 173–186.
- Loeber, R., Green, S. M., Lahey, B. B., & Stouthamer-Loeber, M. (1990). Optimal informants on childhood disruptive disorders. *Development and Psychopathology, 1*, 317–337.
- Loeber, R., & Stouthamer-Loeber, M. (1986). Family factors as correlates and predictors of juvenile conduct problems and delinquency. In M. Tonry & N. Morris (Eds.), *Crime and Justice: An annual review of research* (pp. 29–149). Chicago: University of Chicago Press.
- Magdol, L., Moffitt, T. E., Caspi, A., & Silva, P. (1998a). Developmental antecedents of partner abuse: A prospective-longitudinal study. *Journal of Abnormal Psychology, 107*, 375–389.
- Magdol, L., Moffitt, T. E., Caspi, A., & Silva, P. (1998b). Hitting without a license: Testing explanations for differences in partner abuse between young adult daters and cohabitators. *Journal of Marriage and the Family, 60*, 41–55.
- McCord, J. (1992). Deterrence of domestic violence: A critical view of research. *Journal of Research in Crime and Delinquency, 29*, 229–239.
- Moffitt, T. E., Caspi, A., Krueger, R., Magdol, L., Margolin, G., Silva, P. A., & Sydney, R. (1997). Do partners agree about abuse in their relationship? A psychometric evaluation of interpartner agreement. *Psychological Assessment, 9*, 47–56.
- Moffitt, T. E., Krueger, R. F., Caspi, A., & Fagan, J. (2000). Partner abuse and general crime: How are they the same? How are they different? *Criminology, 38*, 199–232.
- Moffitt, T. E., Robins, R. W., & Caspi, A. (in press). A couples analysis of partner abuse with implications for abuse prevention policy. *Criminology and Public Policy*.
- Murphy, C. M., O'Farrell, T. J., Fals-Stewart, W., & Feehan, M. (2001). Correlates of intimate partner violence among male alcoholic patients. *Journal of Consulting and Clinical Psychology, 69*, 528–540.
- O'Farrell, T. J., & Fals-Stewart, W. (2000). Behavioral couples therapy for alcoholism and drug abuse. *Journal of Substance Abuse Treatment, 18*, 51–54.
- O'Leary, K. D. (1988). Physical aggression between spouses: A social learning theory perspective. In V. B. Van Hasselt, R. L. Morrison, A. S. Bellack, & M. Hersen (Eds.), *Handbook of family violence* (pp. 31–55). New York: Plenum.
- O'Leary, K. D., Barling, J., Arias, I., Rosenbaum, A., Malone, J., & Tyree, A. (1989). Prevalence and stability of physical aggression between spouses: A longitudinal analysis. *Journal of Consulting and Clinical Psychology, 57*, 263–268.
- Piacentini, J., Cohen, P., & Cohen, J. (1992). Combining discrepant diagnostic information from multiple sources: Are complex algorithms better than simple ones? *Journal of Abnormal Psychology, 20*, 51–63.
- Poulton, R., Moffitt, T. E., Caspi, A., Walker, H., & Milne, B. (2002). *Comparison of a longitudinal birth cohort aged 26 years with a cross-sectional sample of same aged peers from the same community*. Manuscript submitted for publication.
- Schafer, J., Caetano, R., & Clark, C. L. (2002). Agreement about violence in U.S. couples. *Journal of Interpersonal Violence, 17*, 457–470.
- Shaefer, E. S. (1965). Children's reports of parental behavior: An inventory. *Child Development, 36*, 413–424.
- Siegel, D. J. (1999). *The developing mind: Toward a neurobiology of interpersonal experience*. New York: Guilford Press.
- Straus, M. (1979). Measuring intrafamily conflict and violence: The Conflict Tactics (CT) Scale. *Journal of Marriage and the Family, 1*, 75–88.
- Straus, M., Gelles, R. J., & Steinmetz, S. K. (1980). *Behind closed doors: Violence in the American family*. Garden City, NY: Doubleday.
- Szinovacs, M. E., & Egley, L. C. (1995). Comparing one-partner and couple data on sensitive marital behaviors: The case of marital violence. *Journal of Marriage and the Family, 57*, 995–1010.
- TenVergert, E., Kingma, J., & Gillespie, M. W. (1990). Dichotomous items and extreme item difficulties: Factor analysis of the Conflict Tactics Scale. *Methodika, 4*, 47–57.
- U.S. Department of Justice. (1995). *National Crime Victimization Survey*;

- Violence against women: Estimates from the redesigned survey* (Special Report No. NCJ-154348). Washington, DC: Bureau of Justice Statistics.
- Wolfe, D. A., Scott, K., Reitzel-Jaffe, D., Wekerle, C., Grasley, C., & Straatman, A. (2001). Development and validation of the Conflict in Adolescent Dating Relationships Inventory. *Psychological Assessment, 13*, 277-293.
- Wolfe, D., Wekerle, C., Reitzel-Jaffe, D., & Lefebvre, L. (1998). Factors associated with abusive relationships among maltreated and non-maltreated youth. *Development and Psychopathology, 10*, 61-85.
- Wolfe, D., Wekerle, C., & Scott, K. (1997). *Alternatives to violence: Empowering youth to develop healthy relationships*. Thousand Oaks, CA: Sage.
- Zahner, G., Leckman, J., Benedict, T., & Leo-Summers, L. (1989). *The clinical process of assembling psychodiagnostic information from parents, children and teachers: Recommendations for multiple informant algorithms for the Diagnostic Interview Schedule for Children*. Washington, DC: Epidemiology and Psychopathology Research Branch, Division of Clinical Research, National Institute of Mental Health.

Received December 11, 2001

Revision received July 22, 2002

Accepted September 6, 2002 ■

Correction to Carels et al. (2003)

The article "The Association Between Emotional Upset and Cardiac Arrhythmia During Daily Life" by Robert A. Carels, Holly Cacciapaglia, Carlos I. Pérez-Benítez, Olivia Douglass, Samantha Christie, and William H. O'Brien (*Journal of Consulting and Clinical Psychology*, 2003, Vol. 71, No. 3, pp. 613-618), contained an error. On page 615, lines 18, 20, 22, of Table 1, the data in the rows that read "Tachycardia in min per hr," "Repetitive PVCs per hr," and "PVCs per hr" are incorrectly reported in the *n* and % columns. They should have been reported in the *M* and *SD* columns. The corrected table appears below.

Table 1
Baseline Characteristics of Patients in the Sample

Baseline characteristic	<i>M</i>	<i>SD</i>	<i>n</i>	%
Age, in years	66.4	11.7		
Yearly income (<\$30,000)			32	72.7
Years of education	11.7	1.8		
Gender, male			28	60.9
Race, Caucasian			42	91.3
Prior MI			27	58.7
Prior PTCA			10	21.7
Prior CABG			16	34.8
Used antiarrhythmic agents			30	65.2
History of hypertension			23	50.0
History of cholesterol			26	59.1
History of diabetes			23	51.1
History of smoking			28	63.6
Currently smokes			2	4.5
Body mass index, kg/m ²	28.9	5.9		
Recorded during Holter monitoring				
Tachycardia			14	30.4
Tachycardia in min per hr	3.9	9.7		
Repetitive beats			27	58.7
Repetitive PVCs per hr	29.2	95.2		
Patients with arrhythmia			32	69.5
PVCs per hr	119.9	300.7		
New York functional class, < 3 (exc. 1)			31	64.6
Resting LVEF, %	32.6	10.2		
Mood and physical factors				
Negative emotion	1.36	0.48		
Positive emotion	3.84	1.06		
Breathless/faint	1.31	0.49		
Weak/swollen	1.36	0.53		
Work intensity	1.23	0.51		

Note. *N* = 46. MI = myocardial infarction; PTCA = percutaneous transluminal coronary angioplasty; CABG = coronary artery bypass graft; exc = excluding; PVC = premature ventricular contraction; LVEF = left ventricular ejection fraction.