Journal of Family Violence, Vol. 18, No. 1, February 2003 (© 2003)

Effects of Family Violence on Child Behavior and Health During Early Childhood

Diana J. English,[1,2] David B. Marshall,[1] and Angela J. Stewart[1]

Looking at families where children have been abused/neglected in early childhood, this study examined measures of child behavior and health to see if they tended to be worse when domestic violence is or has been present in a family. Further, caregiver and family characteristics as well as other case factors were examined, as possible moderators or mediators of the effects of domestic violence. Results indicate that domestic violence, of the type and severity occurring in our sample, does not have a direct effect on child outcomes by Age 6, when other associated variables are taken into account, but has considerable *indirect* effects. There is a pronounced impact of domestic violence on family functioning, the caregiver's general health and well being, and the quality of the caregiver's interaction with the child, which in turn are significantly associated with decrements of child functioning related to behavior problems and health. Some implications of this study for research in the area of domestic violence and child maltreatment are discussed.

KEY WORDS: domestic violence; maltreatment; child abuse; neglect; child outcomes.

INTRODUCTION

In the past decade there has been an increased awareness of and interest in the co-occurrence of domestic violence (DV) and child abuse/neglect (C/AN). This interest has included a focus on identifying the effects of witnessing adult domestic violence on the social and physical development of children (Edelson, 1995, 1999a,b). Much of the early research has identified the extent of co-occurrence of DV and C/AN, based on data obtained from national surveys, reviews of treatment provider records, reviews of medical records, interviews with women in shelters, and reviews of child protective services (CPS) records.

Ten years ago, in a national survey on family violence, Straus and Gelles (1990) found that children were twice as likely to be physically abused by mothers or fathers in households where there was battering, compared to households where no battering was reported. Other studies too have concluded that children who witness DV are at greater risk of being abused (Saunders, 1994; Suh & Abel, 1990). A study of the effectiveness of treatment interventions for maltreated children, by Daro and Cohn (1988), estimated 11–42% co-occurrence of DV and C/AN in CPS treatment populations. Stark and Flitcraft (1988) examined medical records of children suspected of C/AN and found that 45% of the mothers had medical histories suggestive of DV. Similarly, McKibben *et al.* (1989) found that 59% of the mothers of child abuse victims had medical records suggesting DV. In her review of the domestic violence literature, McKay (1994) found that between 45 and 75% of women in domestic violence shelters report that their children experienced one or more forms of maltreatment.

In addition to prevalence data reported in the literature from national survey, treatment intervention research, medical records, and DV shelters, some studies provide data on co-occurrence based on CPS referral information or identification of DV as an issue during CPS investigation. Hangan (1994) found that 32% of a 7-month cohort of CPS cases had indications of DV recorded in the child's record. Dykstra and Alsop (1996) found DV cited in 30%

[1]State of Washington Office of Children's Administration Research, Seattle, Washington.

[2]To whom correspondence should be addressed at Office of Children's Administration Research, P.O. Box 47986, Seattle, Washington 98146-7986; e-mail: endi300@dshs.wa.gov.

0885-7482/03/0200-0043/0 © 2003 Plenum Publishing Corporation

of 200 substantiated CPS cases of the Massachusetts's Department of Social Services. English (1998) found, in a 1-year cohort of accepted referrals, that 14% of CPS intakes in Washington State included allegations of DV at intake. In a separate examination of 32,000 postinvestigation CPS records, it was found that DV was indicated by a CPS worker in 55% of the physical and emotional abuse referrals and 47% of the emotional abuse only referrals (English *et al.*, 1999). Despite differences in methodologies employed, underlying purposes of the studies, limitations associated with sample size, different populations, and differential definitions, published studies and reports indicate a 30% to 60% overlap between the presence of DV and C/AN (for a more comprehensive review of the research, see National Clearinghouse on Child Abuse and Neglect Campbell & Lewandowski, 1997; Edelson, 1999a; [NCCANCH], 1999).

Several studies have reported that male batterers are more likely to physically abuse their children (Bowker *et al.*, 1988; Giles-Sims, 1983; Mayhall & Norgaard, 1983; Stark & Flitcraft, 1984). However, women who are victims of domestic violence have also been reported as perpetrators of maltreatment (Gayford, 1975; Giles-Sims, 1983; Petchers, 1995). Preliminary evidence indicates that children in violent homes are at increased risk for all types of maltreatment, including physical abuse, physical neglect, sexual abuse, and emotional abuse. Furthermore, one study of DV in a CPS referral population found an increased likelihood of postinvestigation re-referral (English *et al.*, 1999), that is, a case re-entering the CPS system.

The presence of domestic violence in homes has also been found to be associated with the likelihood of child placement in foster care, and with child fatalities. Hess *et al.* (1992) found that initial CPS assessments did *not* identify DV as an issue. However, at re-entry, DV was found to be a precipitating factor in the re-abuse and subsequent placement of children. Several child fatality studies indicate an association between DV and child death. For one, a study in the state of Oregon found that DV was present in 41% of families where a child experienced critical injuries or death (Oregon Department of Human Services, 1988). More recently, in 1997, Washington State Department of Social and Health Services reviewed 117 child fatalities, and found that DV was indicated in 48% of the fatalities (Andersch, 1997). And in a study of 67 fatalities, Felix and McCarthy (1994) found that in 43% of that set of Massachusetts Department of Social Services fatality cases, DV was indicated as an issue. Thus, the overall indication to date, from studies across the country, is that domestic violence can be found in about 40–48% of homes in which there is a maltreatment-related child fatality.

Perhaps less irrevocable but nonetheless quite significant, *child functioning* too is being discovered to be negatively impacted by the presence of domestic violence in the home. Research is beginning to emerge that establishes a link between family aggression and children's symptoms of psychopathology, including both verbal and physical aggression (Fantuzzo *et al.*, 1991; Fantuzzo & Lindquist, 1988; McClosky *et al.*, 1995). Areas of functioning identified as being impacted by DV include a child's cognitive and emotional responses, behavioral problems, and physical-health problems (for a review see Campbell & Lewandowski, 1997). More specifically, various studies have found that children who live in homes where family violence is present show a loss of self-esteem, have increased levels of anxiety, perform worse in school, evidence more conduct disorders, aggression, and behavior problems, and show impaired problem solving skills. Also, such children have an increased risk for violent behavior, delinquency, and adult criminal activity (Campbell & Lewandowski, 1997; Maxfield & Widom, 1996; McClosky *et al.*, 1995; McGee *et al.*, 1997; Widom, 1989). Furthermore, there is some indication that children suffer adverse effects not only from experiencing trauma as a result of verbal and physical behaviors *directed* at them by caregivers but also simply from *witnessing* DV (Fantuzzo & Lindquist, 1988; Hughes, 1988).

Several studies have identified potential moderating factors associated with the experience of violence (witnessing DV or actual C/AN) and child outcomes. Potential moderators include the severity of the DV witnessed, whether the child is a victim of other types of maltreatment (Peled & Davis, 1995), age and gender of child (Hughes *et al.*, 1989; Peled & Davis, 1995), family situational factors such as child's relationship to the perpetrating adult, whether step-father is present, prior history of childhood victimization (Daly *et al.*, 1993; Peled & Davis, 1995; Rosenbaum & O'Leary, 1981; Straus & Gelles, 1990; Suh & Abel, 1990; Wilson & Daly, 1987), time since exposure (Edelson, 1997; Hughes, 1988; Peled & Davis, 1995; Sinclair, 1985), presence of *nonviolent* marital discord, and maternal psychological stress (Hershom & Rosenbaum, 1985; Shepard, 1992).

Given the significant degree of overlap between DV and C/AN, and the many potential negative outcomes for children, it is important to continue to study relationships between domestic violence and child abuse and neglect. Thus far, research has provided only limited answers to the many questions that arise when studying this issue. Knowledge of the link between DV and C/AN would be enhanced by studies that more fully describe cases where there is co-occurrence of DV and C/AN. Specifically, a better understanding is needed of child-rearing capacities

of battered women (Saunders, 1994), as are in-depth studies which detail the short and long term social and mental health effects on children who witness domestic violence and who also experience child abuse/neglect (Edelson, 1995).

Toward these ends, the present study looked at families where children have been abused/neglected, and examined measures of child behavior and health to see if they tended to be worse when domestic violence is or has been present in a family. Further, caregiver and family characteristics as well as other case factors were examined as possible moderators or mediators of the effects of domestic violence. In light of significant associations between some of these factors and domestic violence, a multivariate approach was taken in order to gauge the direct and indirect effects of domestic violence, if any, on child behavior and health.

METHODOLOGY

Design and Sample

Longitudinal Studies of Child Abuse and Neglect (LONGSCAN, 1996) is a set of five coordinated research projects designed to examine the antecedents and consequences of child maltreatment (Runyan *et al.*, 1998). An overview of LONGSCAN is provided in the introduction of this special issue. Data from multiple domains are collected from each child and primary caregiver, including child characteristics, family/parent characteristics, parental and family functioning, extra-familial relationships, community ecology, child outcomes, and system of care factors (including service utilization and maltreatment history). Common measures are used across the LONGSCAN sites.

Subjects for this analysis represent a subset of the participants in the LONGSCAN consortium of studies—they are children in the Northwest (NW) LONGSCAN sample, a cohort of 261 children referred to CPS for abuse/neglect (who may or may not have been substantiated for maltreatment at the time of recruitment into the study). All children in the NW sample were assessed by CPS intake staff as moderately or highly likely to be maltreated in the future, absent intervention. The data used in this study were obtained from (1) interviews with the primary caregiver and child when the child was 4 and 6 years of age, (2) a review and abstraction of CPS case files, and (3) teacher reports on child behavior (returned to us via mail). Success of training of interviewers was based upon calculations of inter-rater reliability. In the course of the training process, the interviewers first observed a trained interviewer administer three interviews. Then the interviewer conducted several observed pilots before videotaping three interviews. An independent reviewer at the LONGSCAN Coordinating Center then scored these videotaped interviews. Each interviewer had to meet an inter-rater reliability standard of .90 Kappa before they could proceed with administering the interview protocol with the primary caregiver and child (inter-rater reliability was measured differently for the child and caregiver interviews, depending on the measures embedded within the interview). A similar within-site procedure was established to obtain and maintain inter-rater reliability for case record review and abstraction.

Measures

Independent Measures

Our analysis of child maltreatment is based on CPS electronic data and on complete CPS file record review for every referral to CPS. We collect and analyze data on risk assessment, CPS decision-making (investigation, substantiation, case disposition, placement, etc.), and family demographics and referral history. In addition, case records are coded for perpetrator type, and maltreatment type, frequency and severity for every CPS allegation using a modified and expanded version of the typology developed by Barnett *et al.* (1991, 1993). By the Age 6 interview, the 238 children with completed Age 6 interviews have been subjects of 1,409 reported allegations in 1,085 CPS referrals. We view a higher number of referrals to CPS simply as a rather crude proxy for comparatively higher degrees of caregiver-child conflict and/or neglect issues in a given family. Most of the children have been reported for multiple types of abuse and neglect: by Age 6, only 35 children (15%) have been reported only for physical neglect (lack of supervision and/or failure to provide).

Because little is known about the factors associated with domestic violence and child abuse/neglect in violent families, the initial list of variables was left purposefully large, though not every variable was included in every analysis, and screening of variables was a necessary procedure at the outset. The initial list included any variables available within the LONGSCAN framework that had been identified as potentially relevant in prior research on DV and C/AN. For the sake of discussion, the variables can be categorized into three domains of convenience: *child*, *caregiver*, and *family*. *Child-domain* variables included age, gender, race/ethnicity, birth order, and observed level of child stimulation in home (though this latter factor might be considered to be in the family domain as well). *Primary caregiver domain* demographics included caregiver's age, race/ethnicity, marital status, education,

and employment status. Also included in the caregiver domain were measures of primary caregiver's health status, illness/injuries interrupting life activities, overall health, depression, substance use/abuse (including alcoholism), and measures of everyday stressors. Historical conditions included in the caregiver domain were whether they had received mental health services, had been sexually abused as a child or teenager, and/or had been physically abused as a child. Other variables related to the primary caregiver were parenting skills and abilities, conflict tactics with child and with/from partner, and stability of partner (though this might be considered a family domain variable as well). In the *family domain*, family characteristics recorded included income, family size, source of income, religious affiliation, partner status (present or not), type of male in the home, father involvement with the child, and functional social support, as well as measures of family functioning (for instance, cohesion, conflict, and health). Also a part of the family domain (only if there was a spouse/partner in the home) was education and employment status of the spouse/partner (given that not all respondent caregivers had a spouse/partner in the home, sample size was reduced when using partner's education and employment status as predictors).

Caregiver depressive symptomatology, a key variable, was measured using the Center for Epidemiological Studies Depression Scale (CES-D), a 20-item measure of depressive symptoms (Radloff, 1977). In this study, it was a measure of depressive symptoms of the child's primary caregiver. A score of 16 or higher is commonly used as a cut-point for high depressive symptoms on this scale. High internal consistency has been reported, with Cronbach's alpha coefficients ranging from .85 to .90 across samples (Radloff, 1977). High concurrent validity based on clinical and self-report criteria has been reported for this instrument. Specifically, 70% of psychiatric inpatients ($N = 70$) but only 21% of a general population ($N = 4{,}996$) scored at and above a cutoff score of 16 (Radloff, 1977). Considerable convergent validity (regarding other measures of depression) and discriminant validity (regarding measures of constructs *other* than depression) also have been reported (see Radloff, 1977). Regarding the present sample, 67 (28%) of caregivers have total CES-D scores indicating clinical depressive symptomatology.

The Self-Report Family Inventory (SFI) also deserves special mention. The SFI is a 36-item self-report instrument designed to assess an individual's perception of his/her family, regarding various domains. The questionnaire represents the self-report level of the Beavers Model of Family Functioning (see Beavers *et al.*, 1990). There are five subscales of the SFI: Health/Competence, Conflict, Cohesion, Expressiveness, and (directive) Leadership. To better reflect LONGSCAN populations and family situations, the word "household" was substituted for "family" throughout the questionnaire. Given this modification, respondents were asked to respond to statements using a 5-point scale (1 = *Fits our household very well* to 5 = *Doesn't fit our household at all*). Because of reversal of certain designated items, lower scores represent greater competence on all SFI scales. Hampson *et al.* (1991) reported that the internal consistency of the SFI has been measured with a Cronbach's alpha of .86. Test-retest reliability coefficients (for 30–90 days) ranged from .84 to .87 for family health/competence, .50 to .59 for conflict, .50 to .70 for cohesion, .79 to .89 for expressiveness, and .41 to .49 for directive leadership (Beavers *et al.*, 1990). Convergent and concurrent validity have been demonstrated through comparisons to other assessments of family functioning, such as FACES II and FACES III (Hampson *et al.*, 1991), the McMaster Family Assessment Device (Epstein *et al.*, 1983), and the Beavers Interactional Scales (Beavers *et al.*, 1985).

Though domestic violence is central to this study, how best to measure it and use it as a variable was an open question from the outset of the research. Making a virtue of necessity, the approach taken was to use four different methods of measuring DV, in order to compare the methods and to assess each one's sensitivity in the context of the other methods of measurement available (results are reported in Table I). This plan was possible because of the multimeasure protocol of LONGSCAN. One measurement approach was based upon the fact that caregiver victimization history was collected at the baseline and/or age four interviews. Caregiver experiences of domestic violence and childhood history of abuse/neglect were measured by an 11-item questionnaire the caregiver completed relating to possible physical or sexual abuse of the respondent during childhood, adolescence, or adulthood (the VICA, see Hunter *et al.*, 1994). Caregivers were asked to respond to questions about being physically hurt by a parent-figure as a child, sexually molested or raped before and after age 13 by a parent-figure, and whether they had been hit, slapped, beaten, pushed, or sexually assaulted by a partner as an adult. There are no reported reliability studies on this instrument. From the "*victimized as an adult*" questions, we constructed (method 1) a dichotomous history of DV (yes/no) variable. Further, at the Age 6 interview we administered the Partner-to-Partner version of the Conflict Tactics Scale (CTP; Straus, 1990; Straus & Gelles, 1990). Since the CTP asks about conflict tactics in the previous 3 months, endorsements of the CTP *minor or severe violence items*, whether as victim or perpetrator, were used to construct (method 2) a self-reported current DV variable. Further, endorsements of the DV-specific items from the "Things I've Seen and Heard"

questionnaire (Richters & Martinez, 1993), administered at Age 6, were used to construct (method 3) child self-report of current DV. Finally (method 4), any concrete mention of DV issues in the family from any CPS referral record, or assessment of the DV risk factor in the CPS investigative risk assessment, was coded as a CPS report of DV.

Next, in keeping with recommendations regarding the use of multiple informants to study the issue of domestic violence (see Sternberg *et al.*, 1998), these various sources of data were combined to create several composite variables with which to indicate past and/or present DV in a family. Specifically, three separate measures of DV were constructed: (1) *a global measure of current DV* (yes/no at Age 6, based on information from any source), (2) *a three-category variable of DV* including (a) no reports of DV, (b) history of DV only, and (c) current DV (with or without history), and (3) *a DV scale variable*. The DV scale variable was constructed as a sum of (recoded) variables related to (A) child's report of witnessing, (B) caregiver self-report of victimization as an adult, (C and D) caregiver self-report as victim and/or perpetrator, and (E) CPS record DV documentation.[3]

Dependent Measures

Two key dependent domains were the main focus of the analyses reported herein: (1) child's behavior and (2) child's health. Data on these domains were collected from the primary caregiver during in-depth interviews when the children were 4 and 6 years old—the 6-year-old interview provided the data used in the present analyses. Primary caregiver report of child's behavior was measured using a standardized measure, the Child Behavior Checklist (CBCL; Achenbach, 1991), a 113-item behavior checklist commonly used to measure child psychopathology. Test-retest reliability, concurrent validity, and predictive validity of the CBCL have been reasonably well established, but because of the various forms of the measure and its numerous subscales the extensive psychometrics related to the CBCL are not summarized here (but see Achenbach, 1991; Achenbach *et al.*, 1987; Achenbach & Edelbrock, 1981). The raw score for total problems was used in the analysis. By the Age 6 interview, 86 (36%) of all children in the sample have CBCL T-scores in the borderline clinical range and above; 57 (24%) of the children are clearly in the clinical range.

Regarding child health, specific problem areas were measured by asking the primary caregivers if the child had any of nine physical, learning, or emotional problems. The particular problems included were emotional disorder, mental retardation, developmental delay, physical handicap, hearing problem, speech problem, vision problem, and chronic illness/disease. Then the caregiver was asked: "Is there any other illness or problem, that you know of, which affects (the child's) growth and development?" The total number of health problems identified in response to these questions was used as a global measure of child health. Some psychometric information is available regarding this measure of child health, as a result of analyses conducted thus far in the course of LONGSCAN. Test-retest reliability was demonstrated by significant chi-square associations between Age 4 and Age 6 reports of each of seven chronic conditions that were asked at both interviews ($p < .001$ for each test).[4] Regarding concurrent validity, what we know is that at the Age 4 interview the receipt of services was significantly associated with the caregivers' report of a chronic problem or condition as follows: children with developmental delay were more likely to see a developmental evaluation specialist ($p < .001$); those with a speech problem were likely to see a language specialist ($p < .001$); those with a hearing problem were likely to see a speech/language specialist ($p < .02$); and those with emotional disorders were likely to see a mental health professional ($p < .001$).

Analyses

Though abbreviated for the sake of clarity and focused upon a description of the effects of DV on child health and behavior by Age 6, the analyses that are the subject of this article were conducted within a context of (1) a comprehensive exploration of bivariate associations between different classifications of DV, child maltreatment, and other variables and measures, (2) a prior analysis of the possible effects of DV on child outcomes at age four (Marshall, 1997), and (3) development of various multivariate and linear and logistic regression models of DV

[3]The DV scale variable (logical maximum possible = 11, empirical maximum = 8) was constructed as a sum of variables related to (A) *child self-report of violence* (either of the items "I have seen grown ups in my home hit each other" or "I have seen someone in my home get shot or stabbed" resulted in this variable being coded as a 1), (B) *self-reported history of violence*, based on baseline and Age 4 interviews (if DV was indicated at either time, this variable was coded as 1), (C) *Conflicts Tactics Scale (respondent to partner)*, recoded 1–2 = 1, 3–9 = 2, 10 or greater = 3), (D) *Conflicts Tactics Scale (partner to respondent)*, recoded 1–2 = 1, 3–9 = 2, 10 or greater = 3), (E) *number of CPS referrals with DV* (up to the Age 6 interview), recoded 1–2 = 1, 3–9 = 2, 10 or greater = 3. The frequency distribution in the sample (Age 6 interview, $N = 238$) is as follows: 0–23 (9.7%), 1–81 (34%), 2–69 (29%), 3–34 (14.3%), 4–14 (5.9%), 5–6 (2.5%), 6–3 (1.3%), 7–6 (2.5%), 8–2 (.8%).

[4]The seven conditions included speech problems, hearing problems, vision problems, chronic illness, mental retardation, physical handicap, and emotional problems.

and child behavior, including structural equation models (complex models deserving of their own treatment).

Taking a multivariate approach to this problem, as was done in the case of the present study by conducting a MANOVA, is important to sorting out the independent effects that different variables may have on the outcomes. This is because even though many variables may be found to have significant *bivariate* relationships with child outcomes, they might not really have a *distinct* impact. That kind of situation can arise because many of the variables of interest are correlated not only with the outcomes, but also with each other. The value of a multivariate test is that the variance of all other variables can be removed in consideration of the relationship of each independent variable and its specific effects on, in this case, child health and behavior. Proceeding in this fashion allows, for instance, an assessment of whether domestic violence *directly* causes child health and behavior problems or if any such problems seen in the context of DV are a result of other factors that also are associated with it, and which could conceivably mediate (or even moderate) effects it may have on children. Regarding the multivariate analysis done in the course of the present study, a MANOVA was conducted on the Age 6 data set ($N = 238$), using SPSS version 6.1.3. Finally, an explicitly longitudinal analysis was conducted, primarily to increase statistical power of the test of the magnitude of direct effects of DV on child behavioral outcomes. The idea was to use data from the entire record of each child (i.e., from baseline through Age 6), using each *measurement point* as an observation. Because this approach would include intra-subject correlation between the various measurement points for each child, it was necessary to compensate for this by statistical means. For this purpose General Estimating Equations were used (specifically, a GEE logistic regression model). Taking this approach presented its own challenges and required special means to deal with them—these are summarized in the following paragraphs.

As introduced in the preceding paragraph, a Generalized Estimating Equations (GEE) method was used to construct a longitudinal model of child behavior from baseline to Age 6, with an eye toward examining with as much statistical power as possible the possibility of direct effects of domestic violence in the genesis of child behavior problems. The domestic violence variable used was presence or absence of any report of DV (history or current) by the Age 6 interview.[5] Regarding the dependent variable, in order to undertake this analysis it was necessary to create a composite, longitudinal, measure of child behavior, combining information gathered at baseline or Age 4 interviews and Age 6 interviews. This is because, depending upon the child's age at the time of the baseline interview, *the Infant Characteristics Questionnaire* (ICQ; Bates, 1980; Bates *et al.*, 1979), *the Child Behavior Checklist/2-3* (CBCL-2) or *the Child Behavior Checklist/4-18* (CBCL, Achenbach, 1991) had been administered. The CBCL was administered (primary caregiver respondent) to all children at Ages 4 and 6. So, to construct a composite score across all three measurements for all ages (baseline, Age 4, and Age 6), we calculated the Z-scores for *the Fussy/Difficult subscale of the ICQ*,[6] *the total CBCL-2/3*, and *the total CBCL-4/18 scores*. Each subject child thus was given a Behavioral Problems Z-score *for each interview* (this was the Z-score of one of the ICQ subscale or the total score for either the CBCL-2 or the CBCL-4).

To gauge the strength of effects on this dependent measure of child behavior problems, the method of Generalizing Estimating Equations (Zeger & Liang, 1986a,b) was used with a longitudinal data set ($N = 683$ records), estimating a multivariate regression model with the behavioral problems Z-score as the outcome. The GEE method is an extension of Generalized Linear Models (McCullagh & Nelder, 1989) for longitudinal data, allowing construction of models on data sets with more than one record per subject, by using an iterative procedure to estimate and correct for intrasubject correlation. Variable selection procedures were followed to eliminate variables not significant in the multivariate context.[7] Routines from the OSWALD package (Object-oriented Software for the Analysis of Longitudinal Data, Smith, 1997) running under SPLUS (v. 2000) were used for these GEE estimations. Robust estimation of model parameters and standard errors was used. The use of robust statistics allows more accurate estimates of parameter variances when there are deviations in the explanatory variables from normality, and provides a more conservative estimate of parameter significance (Rosseeuw & Yohai, 1984; Yohai *et al.*, 1991).

Regarding the summary of results presented below, results of key descriptive and associative analyses are

[5] For the variables entered into these longitudinal models, there were no significant differences between history of DV or current DV; these two categories were therefore collapsed together.

[6] The fussy/difficult subscale of the ICQ was chosen for its high reliability and its concordance with problem behaviors in later childhood (Bates, 1980).

[7] Possible predictors entered into the models were those measures and demographics evaluated at each time point and also found to be bivariately significant with the outcome measured at Ages 4 and/or 6: race/ethnicity, gender, annual income, primary caregiver (respondent) partner type and status, religious affiliation/orientation, caregiver age, victimization history of caregiver as a child, marital status, if caregiver received mental health services, and measures for caregiver health and alcoholism, depression, social support, conflict tactics with child, and total child health problems.

reported, followed by the results of a Multivariate Analysis of Variance (MANOVA). Finally, there is a concluding mention of the main results of the analysis using General Estimating Equations. These results taken together suffice to characterize the main findings of this research to date.

Data Sets

Two data sets were constructed for the analyses described above. One contained one record per subject child at Age 6 ($N = 238$) and included all relevant measures and demographics at Age 6, and nonredundant measures obtained at baseline and Age 4. The Age 6 measures were the ones included if the instrument was administered at both Age 4 and Age 6. This first data set was used for most of the analyses reported herein. A second data set, described in the Methodology section, was utilized for the analysis using General Estimating Equations, also described under the heading of Methodology. This second data set contained one record per child per measurement point. Only those variables common to each measurement point could be included. Because of dropouts, missing interviews, and because about 1/5 of our sample were measured initially at Age 4 and thus do not have a separate baseline (earlier age) interview, this data set included 683 records (of the 238 children).

RESULTS

As previewed above, under the heading of Analysis, the results of this study focus on descriptions of (1) the prevalence of domestic violence evident in the sample of cases that was studied, (2) variables that were found to be associated with domestic violence, and (3) variables found to be related to child outcomes (behavior and health problems).

Prevalence of Domestic Violence in the Sample

The result of the first analysis reported simply is a description of prevalence of DV in the sample, as measured by three different operationalizations of "domestic violence." As described above, in the Methodology section, the three measures of DV that were used are (1) *a global measure of current DV* (yes/no at Age 6), (2) *a three-category variable of DV* including (a) no reports of DV, (b) history of DV only, and c) current DV (either with or without history), and (3) *a DV scale variable* which was constructed as a sum of variables. Table I shows the prevalence of domestic violence in the sample, for each of these DV measures, at each measurement point. It can be observed from this table that the DV scale is positively skewed — the means are low (~2) but a small fraction of the sample have high scale values, ranging from 4 to 10 and above.

Table I. Frequency (and Percentage) of Domestic Violence in the Sample, as Reported by Biological Mothers and Other Respondents

DV measure/source	Biological mothers only ($N = 159$)	Other respondents[a] ($N = 79$)
At baseline interview		
Self-report (history)	106 (67)	50 (63)
CPS report (current or history)	45 (28)	19 (24)
Self and/or CPS report[b]	117 (74)	57 (72)
At Age 4 interview		
Self-report (history)	102 (64)	41 (52)
CPS report (current or history)	20 (13)	8 (10)
Self and/or CPS report[a]	110 (69)	44 (56)
At Age 6 interview		
Self-report, current (CTP)	23 (14)	3 (4)
CPS report (current or history)	11 (7)	3 (4)
Child report, direct	30 (19)	12 (15)
Child report, ambiguous	63 (40)	12 (15)
Any report[a]	82 (52)	24 (30)
Cumulative, baseline to Age 6		
No DV ever reported	25 (16)	18 (23)
History of DV only	80 (50)	44 (56)
Current DV[c]	54 (34)	17 (22)
Mean, DV Scale	2.2	1.6[d]

Note. Total $N = 238$ (N of subjects remaining at Age 6 interview).
[a] Other respondents includes 18 biological fathers, 22 grandmothers, 14 other female relatives, 14 foster mothers, 6 adoptive mothers, and 5 respondents for whom the relationship with the child is unknown.
[b] Multisource $N <$ sum due to multiple reports on single subjects.
[c] Child report of ambiguous items not included.
[d] $F = 178$, $p < .001$.

As described above, one important indicator of domestic violence was the Partner Conflict Tactics Scale (CTP). The result of the second analysis, reported in Table II, is a frequency distribution of the number of respondents that endorsed (at *any* frequency) the specific CTP items related to DV *by caregiver as victim* and *as perpetrator* (during the previous 3 months). It can be seen from Table II that slapping, pushing, grabbing, or shoving, and throwing or hitting with something (other than a fist) seem to predominate as forms of violence reported both by victims and perpetrators. In contrast, hitting with fist, choking, beating, and kicking, or biting are relatively less common. As will be reiterated in a note to Table II, the total N of all respondents reporting *any* DV victimization and/or perpetration is 26; the totals in Table II are higher than that due to reporting of multiple items by

Table II. Violence Perpetrated by and Against Caregiver: Endorsement of Items From the Minor and Severe Violence Partner-to-Partner Conflict Tactics Subscales ($N = 238$)

Partner conflict tactics Item description[a]	All respondents (total $N = 238$)		Female respondents (total $N = 215$)	
	Victim	Perpetrator	Victim	Perpetrator
Throw something at him/you	5	12	4	12
Choke him/you	1	0	1	0
Beat him/you up	1	4	1	4
Hit or try to hit him/you with something	3	9	2	9
Kick, bite, or hit him/you with fist	2	5	2	5
Slap him/you	3	12	2	12
Push, grab or shove him/you	11	15	10	15
Total[b]	26	57	22	57

[a] Number of respondents reporting, at any frequency greater than zero; "How many times [in the last 3 months] did you [he] . . . ."

[b] The total N of all respondents reporting *any* DV victimization and/or perpetration is 26; the totals here are higher due to reporting of multiple items by single respondents. The crosstabulated breakdown is 6 report *victimization but not perpetration*, 13 reported *perpetration but not victimization*, and 7 report *both victimization and perpetration*. Proportions/percentages were not calculated, due both to multiple responses and to the fact that missing values ($N = 13$) on the "adult partner in home" variable makes uncertain what would be the denominator of the proportion. The denominator, though, would have a maximum of 38 respondents with adult partners in the home at the time of the interview, if that variable could be trusted, but another complication is that it also is unknown if that number would be the same for the 3 months prior to the interview (the period to which the conflict tactics measure referred).

single respondents. The crosstabulated breakdown of role is as follows: six respondents report *victimization but not perpetration*, 13 reported *perpetration but not victimization*, and seven report *both victimization and perpetration*. Proportions/percentages were not calculated for Table II, due both to multiple responses and to the fact that missing values ($N = 13$) on the "adult partner in home" variable makes uncertain what would be the denominator of the proportion.[8] Incidentally, there were no discernable differences in the relative frequency of occurrence (not reported in Table II) of any of the individual items for caregivers as perpetrators versus victims.

[8] As remarked in a note to Table II, the denominator used for CTP proportions would have a maximum of 38 respondents with adult partners in the home at the time of the interview, if that variable could be trusted, but another complication is that it also is unknown if that number would be the same for the 3 months prior to the interview (the period to which the conflict tactics measure referred).

Variables Associated With Domestic Violence

The third set of results to be reported was based on our looking at the associations between domestic violence (measured in the various ways described above) and numerous demographic and case variables, as well as measures of child, caregiver, and family functioning.[9] Regarding family composition, the type of adult respondent (primary caregiver) is indicated for 233 of the 238 children in the sample at Age 6. One hundred fifty-nine (68%) of the caregivers are biological mothers, 18 (8%) are biological fathers (the only type of male respondent indicated), and the remainder are grandmothers (22 or 9%), other female relatives (14 or 6%), foster mothers (14 or 6%), or adoptive mothers (6 or 3%). There is not a significant difference in the proportions of these groups that self-report domestic violence, but this statistical comparison lacks sufficient power to adequately compare them.

In the course of very extensive testing, we found for both self-reported and CPS-reported domestic violence by child Age 6, that (simply) the *total number of CPS referrals* has the largest association with DV (largest mean difference, most significant difference in means for those families with DV vs. those without). Other *maltreatment and demographic* variables included in this analysis failed to show any significant associations with domestic violence. Regarding an outcome domain, addressed in a multivariate context below, it is interesting to note that the total number of CPS referrals also showed the largest correlations with *child problem behaviors* (based on the Child Behavior Checklist).

Table III shows the (continuous) measures and (categorical) caregiver conditions that were found to have a statistically significant association with domestic violence at Age 6, for all respondents. Significant results related to *caregiver and family* factors provide a vivid picture of some psychological and familial conditions of domestic violence in families such as those studied here. It is a picture that prominently includes caregiver alcoholism,

[9] The demographic and functioning variables entered into this analysis were: Race/ethnicity of caregiver, race/ethnicity of child, child gender, marital status of caregiver, type of male in the home, stability of partner in the home, poverty, religious affiliation, education level, employment status (of caregiver, and also of partner, if present), caregiver's alcoholism screen score (CAGE), caregiver's depression screen score (CES-D), caregiver's having received mental health services, caregiver having been sexually abused as a child or teenager, caregiver having been physically abused as a child (both measured by the VICA), conflict tactics of caregiver toward child (CTS), child behavior problems (CBCL, total raw score), and Family Health and Competence, Cohesion, and Conflict (all measured by the SFI).

Table III. Means of Measures[a] and Proportions of Groups Having Significant Bivariate Associations With Domestic Violence Status by Age 6 ($N = 238$)

Domestic violence measure	DV status: No DV	History only	Current DV	p^b
	Mean of measure			
Continuous measures				
CAGE—Alcoholism screener (*caregiver*)	0.4	0.9	1.0	.046
CES-D—*Caregiver's* depression[c]	9.4	11.7	13.2	.151 (ns)
CTS—Verbal aggression (*caregiver*-child)	1.7	2.5	2.6	.002
CTS—Minor violence (*caregiver*-child)	0.9	1.4	1.2	.023
CBCL—Raw total score (*child* behavior problems)	27	36	35	.06 (ns)
SFI—*Family* health and competence	33	38	44	.0004
SFI—*Family* cohesion	9	12	14	.001
SFI—*Family* conflict	20	21	24	.009
	Percent of cases in each DV category with given condition[d]			
Groups defined by certain conditions				
Caregiver received mental health services—Yes	26	56	36	.015
Caregiver (biological mother only); male partner stability—Unstable	29	35	48	.032
Caregiver sexually abused as child or teenager—Yes	33	63	54	.003
Caregiver physically abused as child—Yes	30	62	54	.002

Note. Relevant domains are indicated through *italicization*.

[a] Among maltreatment-related variables, only total number of CPS referrals, birth to Age 6, (*Family*) was significant.

[b] ANOVA F-test probability of no significant difference for measures; chi-square likelihood ratio probability of no significance for categorical (demographic) variables.

[c] Though the caregiver depression variable (CES-D) was not significant when treated continuously and in bivariate association with DV (trichotomous), it attained marginal significance ($p = .067$, chi-square) when dichotomized into clinical (>16) and nonclinical (<16) categories.

[d] Demographic factors Not significant: Race/ethnicity of caregiver or child, marital status, type of male in the home (biological father, nonbiological male, no male in home), poverty ($15,000/year cutpoint), child gender, religious affiliation, education, and employment status (of caregiver, and partner if present).

verbal aggression and minor violence from caregiver toward a child (or children), and deteriorated family functioning (specifically, low levels of family health, competence, and cohesion, and high levels of family conflict). Tellingly, also significantly associated with DV were the caregiver's having been sexually abused as a child or teenager, and/or physically abused as a child, as well as at some point having received mental health services. The former association is consistent with the view that abuse in childhood or as a teenager may *predispose* some people to later being involved in domestic violence, though it bears emphasizing that any such effect surely would not be an inevitable consequence of abuse.

Selecting for biological mothers only results in just the same variables showing up as significantly associated with DV status, with the sole exception of (un)stability of (male) partner, which is significant for *biological mothers* but not for *all* types of respondent. Partner stability is defined here as a change in partner status (i.e., there is an indication that there has been a separation, reunification, new partner, etc.) during the year previous to the Age 6 interview (with collapsed categories of Stable, Unstable, and No Partner).

A few remarks are in order regarding particular scales included in this associative analysis. First of all, let us reemphasize that the CTS scores in Table III are for *caregiver to child* tactics not *partner to partner*; therefore, nonzero minor violence scores *do* occur for caregivers who do not report DV. Secondly, it should be understood that the Self-Report Family Inventory subscores (SFI; Beavers *et al.*, 1990) are higher for *lower* perceived family competence (more problems); thus, the higher SFI scores for families with DV reflect *lower* family health and competence, *lower* family cohesion, and *higher* levels of family conflict. Also, allow us to observe that though the measure of caregiver's depression (CES-D) did not have a significant bivariate association with domestic violence when the CES-D was treated *continuously*, when it logically was *dichotomized* into clinical (>16) and nonclinical (<16) categories in bivariate association with DV (trichotomous), it

attained at least marginal significance ($p = .067$). Finally, and pivotally, it can be seen in Table III that the association of DV and child behavior problems (as measured by the CBCL total raw score) was only marginally significant ($p < .06$) in the bivariate test, and, as will be seen, even this marginally significant association did not stand up as significant when examined in a multivariate context.

Variables Related to Child Outcomes

As described above, the main interest of this research has been to examine what additional effects there may be, direct and/or indirect, of domestic violence on child outcomes in this sample of child-maltreatment-prone families. As described in the Methodology section, child outcomes were operationalized for the present study in terms of the domains of child behavior and health problems. To generate the results now being reported, variables important to these child outcomes were indicated by means of multivariate modeling (for reasons described in the Methodology section). Table IV shows the results of extensive MANOVA modeling of child *behavior* and *health* at Age 6 (as dual outcome variates). For the total CBCL (raw) score, the only significant predictors were *verbal aggression with the child* (CTS/verbal), *family health and competence* (SFI), and the *total number of CPS referrals* from birth to the Age 6 interview. Caregiver depression (CES-D) again only *approached* significance as a covariate. Importantly, taking all other variables into account, DV status was *not* significantly related to child behavior problems as measured by the CBCL.

For total child health problems, only the *number of CPS referrals* was significant. For both outcome domains, *all* demographic factors and all measures of DV status were *not* significant although many, including DV status, were significant in bivariate tests. In other words, *the influence of DV and various demographic effects drops out when controlling for caregiver depression, conflict tactics, family health and competence, and the number of CPS referrals*. This is an indication that the effects of DV on child behavior and health are primarily *indirect*. In contrast, we have found that comparatively higher degrees of caregiver-child maltreatment and/or conflict (as indicated by higher number of referrals to CPS) is *directly* associated with a marked elevation of problems of both child behavior and child health.

Furthermore, prior modeling of child outcomes at the *Age 4* interview also showed no significant direct influence of DV status. Even with the use of the second, longitudinal, data set described above, in spite of increased sensitivity of the test, a direct effect of DV on child behavior outcomes was not found. Specifically, all alternative DV status variables were tested but found to be *not significant* in the longitudinal multivariate context. However, caregiver *depression* and *verbal aggression toward the child* both were found to be significantly related ($p < .005$ and $p < .0001$, respectively) to child behavioral problems (baseline to Age 6).

Table IV. MANOVA Model: Effects on Child Behavior and Health Evident at Age 6 Interview ($N = 238$)

Model Variable	*B*	Standard error	*p*
Significant covariates for CBCL total score			
Caregiver's depression (CES-D total score)	.125	.071	.078 (ns)[a]
Conflict tactics—Verbal aggression (*caregiver* to child)	2.13	.467	.000
Family inventory—Health and competence	.170	.061	.006
Total *N* CPS Referrals, Birth to Age 6 (*family*)	.643	.181	.000
Significant covariates for total, child health problems			
Total *N* CPS referrals, birth to Age 6 (*family*)	.069	.023	.003

Note. Relevant domains are indicated through *italicization*. Factors (entered but *not significant*): Poverty (annual income below $15,000); caregiver victim of physical abuse as a child; child gender; type of male in the home (biological father, nonbiological male, no male in home); domestic violence (history and/or current); ethnicity of child or caregiver; type of respondent (biological mother or other).[b]

[a] Note 1: Caregiver's CES-D score, though not strictly significant in association with child behavior as a result of this MANOVA, is included in the table not only because it is marginally significant but also because multivariate longitudinal tests (see footnote 5 for a description of these) indicated significance much more strongly ($p < .005$, Beta $= .012$, robust $SE = .0037$), and in contrast to all of the other (nonsignificant) caregiver variables tested, with the exception of verbal aggression toward the child ($p < .0001$, Beta $= .15$, robust $SE = .0267$).

[b] Note 2: While poverty and caregiver's childhood victimization were not significant in this MANOVA model for child outcomes at Age 6, they *are* significantly related to caregiver's depression, which in turn is a (at least marginally) significant covariate of child behavioral problems at Age 6 (see previous note).

DISCUSSION

In the course of this research, we have gained knowledge not just related to the conditions and effects of domestic violence, but also regarding issues pertaining generally to the empirical study of this difficult topic. The discussion that follows will touch upon what we have learned through this research about the *characteristics of families* in the NW LONGSCAN sample (with and without domestic violence), issues pertaining to the *measurement of domestic violence*, what we have come to suspect about the nature of *effects of domestic violence on child behavioral and health outcomes for young children*, and, finally, some thoughts regarding *limitations of the study*.

Characteristics of Families in the NW LONGSCAN Sample

Biological mothers are the predominant perpetrators of maltreatment in our sample, and there are no significant differences in type and severity of maltreatment between biological mothers and other types of perpetrators, with the sole exception of sexual abuse by males other than biological fathers. We found that breaking out the number, type, and severity of maltreatment referrals by distinct types of perpetrator added nothing to the domestic violence analysis of this relatively small sample. We do expect considerable differences to emerge when we later are able to examine data across all LONGSCAN sites and when we accumulate data in later years of the LONGSCAN study.

The relative lack of direct male influence on the children of this study may be due to the young age of the children and the transitory nature of the males in most of these families. Polansky *et al.* (1992) have introduced the notion of "Family Radicals"[10] to describe the fluctuating character of households typically served by CPS. They show that the mother–child (or mother–children) unit is relatively stable, despite periodic disruptions due to foster care placements. This mother–child unit then frequently moves around, with frequent changes in household composition. We are presently collating a large amount of longitudinal data on changes in family composition, place of residence and school, and other potentially traumatic or disruptive changes in the lives of children and families. Our preliminary indications from these data are that the mother–child units of our study fit the description of "Family Radicals" quite well. In this situation, the relative influence of any one male, or series of males, while potentially beneficial or dangerous, may be too short-lived to act as a substantial effect on child health and behavior *compared to* the effect of the mother or primary caregiver. One would expect this to be particularly true for younger children.

The NW LONGSCAN sample described here, among all five LONGSCAN samples, is quite likely the set of caregiver-children that lead the most chaotic transitional and troubled lives. They were recruited entirely from CPS-referred families, but have a much smaller proportion of children placed in foster care than the SW site. Thus, they are likely the families with the most transient adult partners. We would therefore expect, if our hypothesis of family (lack of) structure and continuity is correct, that the direct influence of the primary caregiver's adult partners on the children would be the smallest compared to other LONGSCAN sites.

Finally, about one third of the caregivers with the current DV status report recent involvement in mental health services, and over one half of the caregivers with a history of DV report receiving mental health services. It is unknown whether receipt of mental health services was related to the caregiver's history of abuse as a child or an adult, or how much of an effect receipt of services had on family relationships, caregiver depression, caregiver perception of child's behavior, and child outcomes. However, whatever receipt there was of mental health services in the past or present, it did not prevent the referral of the children in this sample to CPS 1,085 times from birth to Age 6.

Measurement of Domestic Violence

One practical finding of note is the demonstration that views of domestic violence differ considerably depending on the basis of measurement (see Table I). In particular, relying on CPS records to estimate the prevalence of domestic violence would almost certainly lead to extreme underestimates of its rate of occurrence. The recommendation of Sternberg *et al.* (1998) to incorporate data from multiple informants when studying domestic violence is right on the mark.

There are several reasons why estimates of prevalence rates might differ for different reporters and time periods. The Partner Conflict Tactics Scale asks about specific acts occurring in the past 3 months, whereas the

[10]Their term borrows from chemistry, where a "free radical" is a relatively self-contained collection of atoms or molecular subunit that is highly reactive, quickly forming larger units with a wide variety of atoms and molecules. (In this social context, the closer chemical analog is a free radical *catalyst*, that only briefly forms complexes with other molecules before detaching and reacting with another molecule.)

victimization history asks specific and general catchall questions such as "Have you ever been physically hurt or physically threatened in any other way?" over the entire period of adulthood. There is likely some reluctance on the part of respondents to endorse socially undesirable acts, as has commonly been observed in survey research, and also CPS social workers vary considerably in the thoroughness of their investigations. Comparing the prevalence of DV in CPS reports during short periods of time to the cumulative prevalence of DV over many CPS reports, we can see that having multiple reporters (social workers) involved with a caregiver over longer periods of time did indeed increase the likelihood that DV would be detected and reported. We know from other work that CPS workers fail to assess the domestic violence risk factor in the *majority* of CPS investigations, despite the significant association of DV with the likelihood of re-referral (English *et al.*, 1999; Marshall & English, 1999). The above factors likely account for at least some of the differences in prevalence rates seen in Table I.

Although the Conflict Tactics Partner Scale has come under criticism for failing to capture the higher degree of emotional terrorization produced, sexual violence, and physical harm inflicted by male-on-female versus female-on-male violence (DeKeseredy & Schwartz, 1998), the higher endorsement by females of DV perpetration versus DV victimization is comparable to other recent studies (Magdol *et al.*, 1997; Moffitt *et al.*, 1997). Other research has also shown a high degree of self-report concordance between male and female partners, when the data are corrected for random errors, of the type, severity and frequency of DV experienced by couples (Moffitt *et al.*, 1997). We are not able, in this study, to evaluate whether the violence is in self-defense, or the degree of harm suffered versus inflicted, and we make no claims that females are in any way "more violent" than males. However, these and similar data do raise the possibility that the females in these relationships make an active contribution to the violent atmosphere or style of conflict in their households. Therefore we do not have a complete picture of the magnitude of the violence by each partner, or any reliable way of knowing how much or how often the child has witnessed DV. Also, it is worth observing that children at this age may have a limited cognitive ability to sort out differences between aggressor, victim, and instigator of violence.

Effects of Domestic Violence on Child Behavioral and Health Outcomes

The multivariate results, taken as a whole, lead us to hypothesize that domestic violence, of the type, severity and frequency as measured and reported in our sample, has little or no directly measurable association with child health or behavior by child Age 6. Instead, DV has a measurable and substantial association with *caregiver and family functioning*, which in turn have a substantial association with child health and behavior. We are presently engaged in further testing of this hypothesis using data from all LONGSCAN sites. A direct link between DV directed at the primary caregiver and subsequent child outcomes may be difficult to find because domestic violence as measured here reflects a *family* use of violence, *involving the female caregiver as perpetrator twice as often as victim*. A picture emerges of households with a general atmosphere of negative, hostile and aggressive behavior occurring between *all* "family" members, however, as stated above, it is unknown how much of the female initiated self-report violence is in self-defense.

Limitations of the Study

Because the LONGSCAN study attempts to understand child maltreatment in a broad, ecological context, it collects information from a wide variety of domains. This focus results in practical limitations to the depth of information that we can acquire in any given domain. Our measures of domestic violence, though from multiple reporters over a period of up to 6 years, still lack much of the contextual and attributional detail of family interactions. The correlation of our measures of DV with measures of family health and competence, caregiver depression, caregiver conflict tactics with the child, and the caregiver's assessment of child behavior provide some but hardly all of this context. In addition, our sample size, while providing adequate statistical power for the construction of some meaningful multivariate models, is presently not large enough to explore fully the range of possible causal path models, or to decide which is better between equally plausible ones. Once maltreatment data becomes available from other LONGSCAN sites, we will be in a position to evaluate more fully the place of child abuse and neglect in the overall atmosphere of family violence. Then too we will be able to more completely and comprehensively evaluate the causal relationships and the relative magnitudes of various influences on child health, development, and behavior. Finally, it is our view that any *single* measures of such complex constructs as "child behavior problems," "family functioning," and "domestic violence" are far from perfect, and even the *definitions* of such constructs are at present open to question. It is our expectation that significant advances in this field of study will in large part be due to increasing use of multiple measures and refined definitions

of what exactly is studied under the rubric of domestic violence.

CONCLUSIONS

The general picture that emerges from these data is an atmosphere of emotional harshness and occasional physical violence that negatively impacts children. In other work in preparation, we do see a small but significant influence of fathers on child aggression and depression when controlling for DV; but the general picture remains of the primary caregiver (the mother) as the dominant influence on the children. It remains unknown how much of the household atmosphere is directly attributable to the mother, with the thought that mother-directed services might be an effective treatment of the problem, and how much of that atmosphere is her reaction or even child-protective response to an even harsher and more violent adult male partner in the household. What *is* clear is that the health and behavior of children in turbulent, maltreating and occasionally violent households known to CPS are mostly affected by their relationship with their primary caregiver, at least up to the age of 6. Therapeutic and behavioral services certainly need to retain a principle focus on the primary caregiver to ensure both protection and appropriate parenting responses to the child. As we collect data on children at later ages, we expect to see this strong dependence of child outcomes on the primary caregiver to weaken, replaced by the increasing influences of other adults and peers. If that is the case, any ongoing harms to children's health and socialization that have resulted from direct or mediated effects of domestic violence in their early years, would at least have a chance of being buffered by other, less violent, relationships that they may develop in the course of increasing maturity. What lasting effects there may nonetheless be is a question that can only be addressed by long-term longitudinal studies that follow these children into adulthood, as they begin to form families and households of their own.

ACKNOWLEDGMENTS

Special thanks to Research Manager Carol Brandford, all the LONGSCAN interviewers, staff of the LONGSCAN Coordinating Center, and to the HHS, Office of Child Abuse and Neglect and DSHS for supporting the LONGSCAN study.

REFERENCES

Achenbach, T. (1991). *Manual for the CBCL/4-18 and 1991 Profile*, University of Vermont, Burlington, VT.

Achenbach, T. M. and Edelbrock, C. (1981). Behavioral problems and competencies reported by parents of normal and disturbed children aged 4–16. *Monogr. Soc. Res. Child Dev.* 46(88).

Achenbach, T. M., Edelbrock, C., and Howell, C. (1987). Empirically-based assessment of the behavioral/emotional problems of 2–3 year old children. *J. Abnorm. Child Psychol.* 15: 629–650.

Andersch, C. (1997). *Relationship of Domestic Violence to Child Fatalities in Cases Known to DSHS Children's Administration*, Washington Department of Social and Health Services, Olympia, WA.

Barnett, D., Manly, J. T., and Cicchetti, D. (1991). Continuing toward an operational definition of child maltreatment. *Dev. Psychopathol.* 3: 19–29.

Barnett, D., Manly, J. T., and Cicchetti, D. (1993). Defining child maltreatment: The interface between policy and research. In Cicchetti, D., and Toth, S. L. (eds.), *Advances in Applied Developmental Psychology: Child Abuse, Child Development and Social Policy*, Ablex Publishing, Norwood, NJ, Chap. 2, pp. 7–73.

Bates, J. E. (1980). The concept of difficult temperament. *Merrill-Palmer Q.* 26: 299–319.

Bates, J. E., Freeland, C. A., and Lounsbury, M. L. (1979). Measurement of infant difficultness. *Child Dev.* 50: 794–803.

Beavers, W. R., Hampson, R. B., and Hulgus, Y. F. (1985). The Beavers approach to family assessment. *Fam. Process* 24: 398–405.

Beavers, W. R., Hampson, R. B., and Hulgus, Y. (1990). *Manual for Beavers Systems Model: Observational and Self-Report Scales*, Southwest Family Institute, Dallas.

Bowker, L. H., Arbitell, M., and McFerron, J. R. (1988). On the relationship between wife beating and child abuse. In Yllo, K., and Bogard, M. (eds.), *Feminist Perspectives on Wife Abuse*, Sage, Newbury Park, CA, pp. 158–174.

Campbell, J., and Lewandowski, L. A. (1997). Mental and physical health effects on intimate partner violence on women and children. *Anger, Aggression Violence* 20(2): 353–374.

Daly, M., Singh, L. S., and Wilson, M. (1993). Children fathered by previous partners: A risk factor for violence against women. *Can. J. Public Health* 84: 209–210.

Daro, D., and Cohn, A. (1988). Child maltreatment evaluation efforts: What have we learned? In Hotaling, G. T., Finkelhor, D., Kirkpatrick, J. T., and Straus, M. A. (eds.), *Coping With Family Violence: Research and Policy Perspectives*, Sage, Newbury Park, CA, pp. 275–287.

DeKeseredy, W. S. and Schwartz, M. D. (1998). "Measuring the extent of woman abuse in intimate heterosexual relationships: A critique of the Conflict Tactics scales." National Electronic Network on Violence Against Women (VAWnet), Applied Research Forum paper. Web address http://www.vaw.umn.edu/Vawnet/ctscrit.htm

Dykstra, C. H., and Alsop, R. J. (1996, Spring). *Domestic Violence and Child Abuse* (Monograph), American Humane Association, Englewood, CO.

Edelson, J. L. (1995). "Mothers and children: Understanding the links between woman battering and child abuse." National Electronic Network on Violence Against Women (VAWnet), Applied Research Forum paper. Web address http://www.mincava.umn.edu/papers/nij.htm

Edelson, J. L. (1997). "The overlap between child maltreatment and woman abuse." National Electronic Network on Violence Against Women (VAWnet), Applied Research Forum paper. Web address http://www.vaw.umn.edu/Vawnet/overlap.htm

Edelson, J. L. (1999a). The overlap between child maltreatment and woman battering. *Violence Against Women* 5(2): 134–154.

Edelson, J. L. (1999b). "Problems associated with children's witnessing of domestic violence." National Electronic Network on Violence Against Women (VAWnet), Applied Research Forum paper. Web address http://www.vaw.umn.edu/Vawnet/witness.htm

English, D. (1998). Co-occurrence: Child abuse and domestic violence. Presentation at the *Sixth Forum on Federally Funded Research on Child Abuse and Neglect*, Office of Child Abuse and Neglect, Washington, DC.

English, D. J., Marshall, D. B., Brummel, S., and Orme, M. (1999). Characteristics of repeated referrals to child protective services in Washington State. *Child Maltreatment* 4(4): 297–307.

Epstein, N. B., Baldwin, L. M., and Bishop, D. S. (1983). The McMaster family assessment device. *J. Marit. Fam. Ther.* 9(2): 171–180.

Fantuzzo, J., DaPaola, L., Lambert, L., Marino, T., Anderson, G., and Sutton, S. (1991). Effects of interparental violence on the psychological adjustment and competencies of young children. *J. Consult. Clin. Psychol.* 59(2): 258–265.

Fantuzzo, J. W., and Lindquist, C. (1988). Violence in the home: The effects of observing conjugal violence on children. *J. Fam. Violence* 4: 77–90.

Felix, A. C. III, and McCarthy, K. F. (1994). *An Analysis of Child Fatalities 1992*, Massachusetts Department of Social Services, Boston.

Gayford, J. (1975). Wife battering: A preliminary survey of 100 cases. *BMJ* 1: 195–197.

Giles-Sims, J. (1983). *Wife Battering: A Systems Theory Approach*, Guilford, New York.

Hampson, R. B., Hulgus, Y. F., and Beavers, W. R. (1991). Comparisons of self-report measures of the Beavers System Model and Olson's Circumplex Model. *J. Fam. Psychol.* 4(3): 326–340.

Hangan, E. (1994). *D.S.S. Interagency Domestic Violence Team Pilot Project: Program Data Evaluation*, Massachusetts Department of Social Services, Boston.

Hershom, M., and Rosenbaum, A. (1985). Children of marital violence: A closer look at the unintended victims. *Am. J Orthopsychiatry* April: 260–266.

Hess, P. M., Folaron, G., and Jefferson, A.B. (1992). Effectiveness of family reunification services: An innovative evaluative model. *Soc. Work* 37(4): 304–311.

Hughes, J. M. (1988). Psychological and behavioral correlates of family violence in child witness and victims. *Am. J. Orthopsychiatry* 58: 77–90.

Hughes, H. M., Parkinson, D., and Vargo, M. (1989). Witnessing spouse abuse and experiencing physical abuse: A "double whammy?" *J. Fam. Violence* 4: 197–209.

Hunter, W., Voorhorst, S., Runyan, D., and Everson, M. (1994). *Re-Victimization Histories and Psychiatric Symptoms of Mothers of Sexually Abused Children.* Unpublished manuscript, University of North Carolina at Chapel Hill.

Longitudinal Studies of Child Abuse and Neglect (LONGSCAN) (1996). *The First Five Years at the Coordinating Center, North Carolina Site and Seattle Site: Final report to the National Center on Child Abuse and Neglect for Grant #90-CA-1467*, Clearing House, National Center on Child Abuse and Neglect, Washington, DC.

Magdol, L., Moffitt, T. E., Caspi, A., Newman, D. L., Fagan, J., and Silva, P. A. (1997). Gender differences in partner violence in a birth cohort of 21-year-olds: Bridging the gap between clinical and epidemiological approaches. *J. Consult. Clin. Psychol.* 65(1): 68–78.

Marshall, D. B. (1997). Effects of domestic violence and child abuse and neglect on family and child functioning: Early childhood data from 261 families in Seattle, WA, USA. Presented at the *5th International Family Violence Research Conference*, Durham, New Hampshire, June 1997.

Marshall, D. B., and English, D. J. (1999). Survival analysis of risk factors for recidivism in child abuse and neglect. *Child Maltreatment* 4(4): 287–296.

Maxfield, M. G., and Widom, C. S. (1996). The cycle of ciolence: Reevisited six years later. *Arch. Pediatr. Adolesc. Med*. 150: 390–395.

Mayhall, P. P., and Norgaard, K. E. (1983). *Child Abuse and Neglect Sharing Responsibility*, John Wiley & Sons, New York.

McClosky, L. A., Figueredo, A. J., and Koss, M. P. (1995). The effects of systemic family violence on children's mental health. *Child Dev.* 66: 1239–1261.

McCullagh, P., and Nelder, J. A. (1989). *Generalized Linear Models*, Chapman and Hall, London.

McGee, R., Wolfe, D., and Wilson, S. (1997). Multiple maltreatment experiences and adolescent behavior problems: Adolescents perspectives. *Dev. Psychopathol*. 9: 131–149.

McKay, M. M. (1994). The link between domestic violence and child abuse: Assessment and treatment considerations. *Child Welfare* 73(1): 29–39.

McKibbin, L., Devos, E., and Newberger, E. H. (1989). Victimization of mothers of abused children: A controlled study. *Pediatrics* 84: 531–535.

Moffitt, T. E., Caspi, A., Krueger, R. F., Magdol, L., Margolin, G., Silva, P. A., and Sydney, R. (1997). Do partners agree about abuse in their relationship? A psychometric evaluation of interpartner agreement. *Psychol. Assessm.* 9(1): 47–56.

National Clearinghouse on Child Abuse and Neglect (NCCANCH) (1999). *In Harm's Way: Domestic Violence and Child Maltreatment. Children's Bureau, Administration on Children, Youth and Families*, Administration for Children and Families, U.S. Department of Health and Human Services, Washington, DC.

Oregon Department of Human Services (1988). *Fatal Child Abuse and Neglect in Oregon 1985 and 1986*, Child Protective Services Section, Oregon Children's Services Division, Salem, OR.

Peled, E., and Davis, D. (1995). *Group Work With Children of Battered Women*, Sage, Thousand Oaks, CA.

Petchers, M. (1995). Child maltreatment among children in battered mothers' households. Paper presented at the *4th International Family Violence Research Conference*, Durham, NH.

Polansky, N. A., Gaudin, J. M., Jr., and Kilpatrick, A. C. (1992). Family radicals. *Child. Youth Services Rev.* 14: 19–26.

Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *App. Psychol. Meas.* 1: 385–401.

Richters, J., and Martinez, P. (1993). The NIMH community violence project: Children as victims of and witnesses to violence. *Psychiatry* 56: 7–21.

Rosenbaum, A., and O'Leary, D. K. (1981). Children: The unintended victims of marital violence. *Am. J. Orthopsychiatry* 51: 692–699.

Rosseeuw, P. J., and Yohai, V. (1984). Least median squares regression. *J. Am. Stat. Assoc.* 79: 871–881.

Runyan, D. K., Curtis, P., Hunter, W. M., Black, M. M., Kotch, J. B., Banduvala, S., Dubowitz, H., English, D., Everson, M., and Landsverk, J. (1998). LONGSCAN: A consortium for longitudinal studies of maltreatment and the life course of children. *Aggression Violent Behav.: Rev. J.* 3(3): 278–285.

Saunders, D. G. (1994). Child custody decisions in families experiencing woman abuse. *Social Work* 39: 51–59.

Shepard, M. (1992). Child-visiting and domestic abuse. *Child Welfare,* July-August: 357–367.

Sinclair, D. (1985). *Understanding Wife Assault: A Training Manual for Counselors and Advocates*, Ontario Government Bookstore, Publications Services Section, Toronto, Ontario.

Smith, D. M. (1997). Oswald: Object-oriented Software for the Analysis of Longitudinal Data in S, Web address http://www.maths.lancs.ac.uk/Software/Oswald/

Stark, E., and Flitcraft, A. (1984). Child abuse and the battering of women: Are they related and how? Paper presented at the *National Family Violence Conference*, Durham, NH.

Stark, E., and Flitcraft, A. H. (1988). Women and children at risk: A feminist perspective on child abuse. *Int. J. Health Services* 18: 97–118.

Sternberg, K. J., Lamb, M. E., and Dawud-Noursi, S. (1998). Using multiple informants to understand domestic violence and its effects. In Halden, G. W., Giffres, R., and Jourrles, E. N. (eds.), *Children Exposed to Marital Violence*, American Psychological Association, Washington, DC.

Straus, M. (1990). *Manual for Conflict Tactics Scales. Family Research Laboratory*, University of New Hampshire, Durham, NH.

Straus, M. A., and Gelles, R. (1990). *Physical Violence in American Families*, Transaction, New Brunswick, NJ.

Suh, El., and Abel, E. M. (1990). The impact of spousal violence on the children of the abused. *J. Independent Soc. Work* 4(4): 27–34.

Widom, C. S. (1989). The cycle of viiolence. *Science* 244: 160–166.

Wilson, M., and Daly, M. (1987). Risk of maltreatment of living with stepparents. In Gelles, R. J., and Lancaster, J. B. (eds.), *Child Abuse and Neglect: Biosocial Dimensions*, Aldine de Gruyter, New York, pp. 215–232.

Yohai, V., Stahel, W. A., and Zamar, R. H. (1991). A procedure for robust estimation and inference in linear regression. In Stahel, W. A., and Weisberg, S. W. (eds.), *Directions in Robust Statistics and Diagnostics*, *Part II*, Springer-Verlag, New York.

Zeger, S. L., and Liang, K.-Y. (1986a). Longitudinal data analysis for discrete and continuous outcomes. *Biometrics* 42: 121–130.

Zeger, S. L., and Liang, K.-Y. (1986b). Longitudinal data analysis using Generalized Linear Models. *Biometrika* 73(1): 13–22.