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CHILD MALTREATMENT

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ABSTRACT

This paper examines how child maltreatment is affected by the economic circumstances of parents. “Child maltreatment” encompasses a wide range of behaviors that adversely affect children. It includes neglect, physical abuse, sexual abuse, and other forms of abuse or neglect. Using state-level panel data on the numbers of reports and substantiated cases of maltreatment, we examine whether socioeconomic factors play different roles for these different types of maltreatment. A key finding is that the economic circumstances of parents matter: increases in the fractions of children with absent fathers and working mothers are related to increases in many of the measures of maltreatment, as are increases in the share of families with two non-working parents, and those with incomes below 75 percent of the poverty line. We also examine the links between family structure, welfare benefits, and child maltreatment. Welfare programs affect the incentives of women and men to work and to live in single or dual-parent families. By changing the family structure and work behavior of parents as well as their incomes, welfare reforms can be expected to affect the incidence of child maltreatment. Although it is too early to accurately determine what the effects of the recent reforms will be, our analysis indicates that: 1) consistent with other research, the characteristics of state’s welfare systems have affected the work behavior and structure of families during the 1977-1996 time period; 2) decreases in a state’s welfare benefit levels are associated with large increases in child neglect, and with small decreases in physical abuse.

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I. Introduction

Child maltreatment is a large and growing problem in the United States. In 1996, over 3 million cases of child abuse and neglect—nearly 50 cases per thousand children—were reported to state child protective services (CPS) agencies, about a fivefold increase over the number and rate just twenty years earlier (Waldfoegel, 1998). Although there is debate about how much of this increase in reports represents a real deterioration in the quality of care that children receive, and how much reflects a growing awareness of child maltreatment, the effect has been to heighten interest in identifying the determinants of abuse and neglect.

This paper is concerned with the links between socioeconomic status—in particular, poverty, employment, and family structure—and child maltreatment. We use state-level panel data on numbers of reports and substantiated cases of child maltreatment, together with state-level measures of the economic status of children's families constructed from Current Population Survey data, to estimate the relationship between family income, family structure (specifically the absence of fathers), and parental work status and maltreatment outcomes. We find strong evidence that these socioeconomic factors influence maltreatment. We also examine the effects of states' welfare (AFDC and Food Stamp) benefit levels on child abuse and neglect. Since welfare benefit levels influence parental employment, family income, and family structure, changes in welfare benefits may affect maltreatment. Our evidence indicates that decreases in welfare benefit levels are associated with increases in child neglect, and with small declines in physical abuse. We conclude with a discussion of the likely effects of the current welfare reforms on child maltreatment.

Economists have long been concerned with determinants of children's well-being, and how the economic circumstances of families affect children's health, their academic performance, educational attainment, and ultimately their labor market performance as adults. However, there is relatively little research that examines how economic circumstances are related to abuse and neglect. And, there are several reasons why it should be a topic of interest to economists.

First, a better understanding of the determinants of child abuse and neglect contributes to the literature that links socioeconomic circumstances to children's performance, in school, on cognitive tests, and later in life as adults. A large body of evidence indicates that children from families with lower incomes, and children from single-parent families, perform more poorly on standardized tests and are more likely to leave school early, and to be poor as adults (see, for example, Corcoran et.al (1992), Hill and Duncan (1987), Brooks-Gunn and Duncan (1997), Mayer (1997), and Shea (1999)). However, the mechanisms through which these effects operate are not well-understood. Child maltreatment is one possible avenue through which socioeconomic factors may affect children's outcomes. The research presented in this paper indicates that increases in poverty and single-parenthood result in higher levels of abuse and neglect. And, child neglect and abuse have been shown to result in poorer academic performance, greater delinquency and substance abuse, and other behavioral problems that may result in poor labor market outcomes later in life (Widom, 1989; Starr and Wolfe, 1991). In addition, children who are abused may be more likely to abuse their own children (Kaufman and Zigler, 1987; Widom, 1989).

Second, a prerequisite for studying the determinants of children's well-being is having *measures* of children's well-being. Measuring the welfare of children—or of people of any age group within a household—is not an easy task. Given the data that are typically available from household surveys, it is difficult to measure what children consume: they share their homes with adults, many of the goods they consume fall into the category of “public goods,” and survey data rarely provide breakdowns of how private goods are allocated within households. Furthermore, the quality of care that children receive is likely to be as important a determinant of their welfare as the quantities of goods and services they consume, and measuring the quality of care is difficult. Measures of child neglect and abuse are very useful indicators of the quality of life of children, in that they provide information on the numbers of children who receive extremely poor care, both in terms of material deprivation and the treatment they receive by their parents.

Third, our research is related to work on the effects of economic fluctuations on health outcomes, much of which is concerned with the links between economic fluctuations and the mental and physical health of adults. Goldsmith, Veum and Darity (1996) present evidence that adults who become unemployed are more likely to become depressed and to suffer from loss of self-esteem. Ruhm (1999) examines the relationship between recessions and mortality, and argues that recessions are actually *good* for adult health—recessions are associated with fewer deaths from coronary disease, accidents, and a variety of other causes. However, Ruhm’s work also indicates that adult mental health suffers during recessions: of the ten categories of death examined, death by suicide is the only one that is countercyclical. This research is relevant to the study of child maltreatment, because the mental health of adults is an important determinant of their children’s well-being. Previous work indicates that parental depression and stress are associated with more child maltreatment (Cicchetti and Carlson, 1989). If so, the effects of parental unemployment on maltreatment may operate directly, through effects on family income, but also indirectly through their effects on the mental health of parents.

Although the empirical work in this paper is largely descriptive, it is useful to consider the types of models that result in links between economic factors and child maltreatment. A good starting place is a simple model of expenditure on “children’s goods,” defined broadly to include parental time as well as goods and services, in which parents make choices by maximizing their welfare (which, with altruism, will also be a function of their children’s welfare), given prices and their endowments of time and money. In this case, the basket of goods that children consume, as well as children’s welfare, will be a function of parental endowments, parental preferences, and prices. Child maltreatment can be defined to occur when a child’s welfare falls below a threshold level. In this simple framework, increases in income and reductions in the prices of “children’s goods” will result in less maltreatment.

This simple framework ignores several important aspects of child maltreatment. First, abuse is often the result of inappropriate *behaviors* by parents toward their children, rather than

inadequate allocations of goods or services. Because emotional and physical cruelty are not terms that enter budget constraints, they are more difficult to model, and economic factors may operate on them in different ways. For example, it may be that (some) parents derive pleasure from maltreating their children, but that maltreatment will, if detected, result in a penalty. In this case, economic factors enter a parent's maltreatment decisions by affecting the opportunity cost of detection relative to the value of being abusive. In theory, since the cost of detection relative to the value of maltreatment could rise or fall with income, maltreatment could decrease or increase with income. Second, factors such as stress and depression affect the likelihood that parents maltreat their children, and these factors may themselves be affected by economic circumstances. For example, the loss of self esteem or depression that accompany unemployment may result in greater levels of child maltreatment, over and above effects that operate more directly through the budget constraint. Likewise, single parenthood may result in greater maltreatment not only because single-parent households tend to be poor, but also because of the stress associated with raising children alone. Given the state-level data we use in this study, it is not possible to disentangle the effects of changes in economic conditions that work directly through budget constraints from those that operate through changes in parental attitudes and behaviors. Our intent is to establish whether economic conditions affect child maltreatment; a more precise understanding of how these effects operate requires micro-level data.

A final important issue is that unobserved parental characteristics that result in abuse and neglect may be correlated with factors that affect labor market outcomes and family structure. For example, an emotionally unstable mother may be less likely to work, less likely to live with her child's father, and more likely to abuse or neglect her child. A finding that unemployment or single parenthood is positively related to maltreatment does not provide information on the underlying structural mechanisms that drive the relationship. This general issue is also important (and hotly debated) in the research on socioeconomic factors and cognitive and academic achievement. For example, Mayer (1997), Blau (1999), and Shea (1999) argue that parental

factors, such as education and the overall quality of the family (i.e. “family background”) are far more important determinants of children’s success than is current income. Other studies, however, contend that economic deprivation in childhood does have direct and profound consequences for children. For example, Brooks-Gunn and Duncan (1997) argue that income deprivation leads to lower achievement by undermining the quality of parenting and the availability of educational resources in the home. This is a difficult issue to settle. However, the results we present on the negative effects of state’s welfare benefit levels on child neglect lends support to the latter position.

The paper is organized as follows. In Section II, we provide background information on the child protective service systems that are in place in all US states and the District of Columbia. Data and empirical methods are discussed in Section III. Section IV presents evidence on the relationships between poverty, parental employment, and family structure on child maltreatment. In an earlier paper (Paxson and Waldfogel, 1999), we presented preliminary evidence that fluctuations in these socioeconomic factors are associated with large changes in rates of child maltreatment. The work presented in this section expands on these results. We trace through the effects of economic factors on reports of child maltreatment, substantiation rates, and on final numbers of substantiated cases of physical abuse, neglect, sexual abuse, and other forms of abuse. We also examine the relationship between cocaine use and maltreatment, and the effects of socioeconomic factors on flows of children into the foster care system.

Section V turns to the links between family structure, welfare benefits, and child maltreatment. Welfare programs affect the incentives of women and men to work and to live in single or dual-parent families. By changing the family structure and work behavior of parents as well as their incomes, welfare reforms can be expected to affect the incidence of child maltreatment. Our analysis indicates that decreases in a state’s welfare benefit levels result in sizeable increases in child neglect, and small decreases in physical abuse. We conclude with a (cautious) discussion of the effects of current welfare reforms on child maltreatment.

II. Child Maltreatment and Child Protective Services

All fifty states and the District of Columbia have legislation defining child maltreatment and specifying under what circumstances it should be reported and by whom; they also have systems in place to receive reports of suspected child maltreatment, to determine whether or not reports should be substantiated, and to decide what actions, including removal of children to foster care or some other form of substitute care, should be taken to protect children from further harm. The most common type of maltreatment reported to child protective services (CPS) is neglect, which constitutes about 58% of all reports. Physical abuse makes up 22% of reports. Sexual abuse, emotional maltreatment, and other categories together account for the remaining 20% (U.S. Department of Health and Human Services, 1998). Reports may be made by so-called “mandated reporters”, usually individuals such as doctors or teachers who work with children and who are required by law to report suspected cases of maltreatment, or by voluntary reporters, such as family members, friends and neighbors, or the children themselves. About 40% of reports are substantiated upon investigation by CPS, and just under 30% are kept open for ongoing intervention, which may involve removing the child from home or monitoring the child’s safety at home (Waldfoegel, 1998).

The system of child protective services in the US has expanded greatly over the past four decades, along with a growing awareness of and concern about child maltreatment. It was not until 1968 that all states had mandatory reporting laws. There was little federal involvement in the area of child maltreatment until 1974, when the Child Abuse Prevention and Treatment Act (CAPTA) was enacted. CAPTA established standards for identification of and response to child maltreatment, created the National Center on Child Abuse and Neglect (NCCAN), and allocated small amounts of Federal money to states that created adequate child protective service agencies. One result of Federal involvement has been the creation of a state-level data base on child maltreatment. Since 1988, NCCAN has been charged with collecting and publishing data on the incidence of maltreatment. Every year since 1990, state child protection agencies have been asked

to provide data on the number of reports of child maltreatment, the disposition of reports, and the breakdown of substantiated cases by type of abuse, as well as by other categories (such as the type of perpetrator, and the age and ethnicity of victims).

Although these data are extremely useful, they must be treated with some caution, since states differ in how their child protective service systems operate. Each state has its own laws against child maltreatment, and their definitions of physical abuse, sexual abuse, neglect, and other forms of maltreatment are not identical. However, there are common elements in the definitions in different states. Physical and sexual abuse have the most clear-cut definitions. Physical abuse consists of a physical injury, or threatened injury, inflicted by a person responsible for the child's care on the child other than by accidental means. Where states differ is in how severe a physical injury must be to qualify as abuse. Some states simply state that physical injury constitutes abuse. Other states specify that the injury has to result in long-term or severe harm to the child. Some states explicitly exempt spanking. Sexual abuse usually covers any sexual contact between a child and a person responsible for the child's care. Variations in the definition of sexual abuse across states are usually due to differences in the definition of who qualifies as a "person responsible for care."

Neglect is the most difficult form of maltreatment to define, and is often split into sub-components that relate to physical, medical, and educational neglect. The elements that are common to most definitions of neglect include: 1) the failure by an adult responsible for a child to supply the child with necessary food, clothing and shelter, 2) the failure to supply necessary medical care; and 3) the failure to send a child to school in accordance with state law. Some laws explicitly state that leaving children unattended or in inadequate care is a form of neglect. An important point to note is that neglect is not necessarily a mechanical result of poverty. Instead, an assessment of neglect is often conditioned on the resources of the child's parents or guardians. Some statutes make this explicit, by specifying that only care-givers who fail to provide children with basic needs *and* who are capable of doing so are guilty of neglect (see, for example, Minn.

Stat. §626.556.)¹ The idea that neglect should be assessed in light of the family's economic circumstances also appears in literature on the assessment of neglect. For example, Gaudin (1993) writes that the “assessment of the adequacy of ... housing and household furniture and appliances must be considered in the context of the limited housing options that conditions of poverty allow many families of color. The unavailability of adequate low-rent housing becomes a question of community neglect, rather than child neglect on the part of parents who are denied access to more adequate housing by reason of economics or discrimination.” A legal guide for physicians, Richards and Rathbun (1999) states that “*If the parents have the resources to care for a child properly but choose not to, they are neglecting that child*” (italics added.) Implicitly or explicitly, children are often counted as being neglected only if they do not receive care or resources that their parents or care-givers *should* have been able to provide given their resources.

There are several other important differences across states in their laws regarding abuse and neglect. First, states differ in their definitions of mandated reporters. For example, in some states only professionals who come into contact with children (physicians, teachers, etc.) are required to report suspected child maltreatment. In other states, *everyone* is a mandated reporter. Second, states differ in the level of evidence required to substantiate a report of maltreatment: some require “some credible evidence”, while others require “a preponderance of evidence.” These differences, combined with varying definitions of maltreatment, may be responsible for some of the variation across states (including the District of Columbia) in the report rates and substantiation rates of child maltreatment—and these cross-state differences *are* large. For example, in Washington D.C. in 1994, 13,369 children, or 11.2% of the children under the age of 18, were the subject of a investigation by CPS, and 5635, or 42%, of these cases were substantiated. In Pennsylvania, a state with one of the most stringent definitions of child abuse in

¹Other states exempt parents from responsibility due to lack of resources only in special cases. For example, Arizona law specifies that neglect is the “inability or unwillingness” of a care-taker to provide adequate resources, except in cases where care to a child with a disability or chronic illness is the result of “unavailability of reasonable services.” (A.R.S. §8-201(21).)

the country, only 0.8% of children were the subject of an investigation in 1994, and the substantiation rate was 30% (U.S. Department of Health and Human Services, 1996). Although differences in the socioeconomic circumstances of children in these two locations may account for some of the difference in rates, a major source is likely to be institutional and legal differences. For this reason, it is important that our analysis adequately accounts for heterogeneity across states in their laws and in the ways their CPS systems operate.

III. Data and Methods

A. Data

The data for our analysis come from a variety of sources. First, the state-level information on child maltreatment from 1990 to 1996 comes from the NCCAN data base. This data base contains information on the numbers of reports of child maltreatment, and the numbers of substantiated cases of physical abuse, neglect, sexual abuse, and other types of abuse. This information can be used to calculate each state's substantiation rate. We also use information on reports from 1977 to 1988, collected by the American Humane Association (from 1977 to 1987) and the National Committee for the Prevention of Child Abuse (in 1988). No consistent information on substantiated cases is available prior to 1990, and we have no state-level information on reports or victims of maltreatment in 1989.

A few details of our measures of abuse and neglect require discussion. First, "reports" are usually recorded by states on a family basis (i.e. number of families reported for maltreatment) but are also sometimes reported on a child basis (i.e. number of children suspected to be victims of maltreatment.) We converted all reports to a "family" basis by multiplying "child-based" reports by the average ratio of family-based to child-based reports in states that produced both figures. Our results do not appear to be sensitive to how this conversion is done, and we obtain similar results if we restrict the sample to states that use family-based reports. Second, states vary in how reports of maltreatment are disposed of after investigation. Most reports are deemed to be

substantiated or unsubstantiated, although in some cases there may be no finding (if, for example, the child protective service agency is unable to locate the family.) In addition, some states have a category of “indicated,” which means that although there is evidence of maltreatment it does not rise to the level required by state law for substantiation. Our measures of the numbers of victims of child maltreatment include both indicated and substantiated cases. Third, some states report medical neglect as a category separate from neglect, but many do not. To make the data more consistent across states, we combine the two categories into one. Fourth, we report results for the category of “other.” This category includes a variety of types of maltreatment, and is the least likely of all measures to be defined the same way across states. For most states it includes emotional maltreatment. Other types of maltreatment that are commonly included in “other” are abandonment and contributing to the delinquency of a child. In addition, many states include newborns exposed to controlled substances (usually cocaine) in this category—this is important to keep in mind when we examine the relationship between drug use and maltreatment. Fifth, our measure of the total number of victims is the sum of victims in each of the categories (physical abuse, neglect, sexual abuse, and other.) In some states, children who are victims of more than one type of maltreatment are included in the victim totals of each type of maltreatment they were exposed to. In these cases, our measure of “total victims” is overstated. This is unlikely to bias our results since we include state fixed effects in our models.

The state-level data on the socioeconomic characteristics of children’s families come from the 1977-1996 March *Current Population Surveys*. These variables were defined to reflect the living conditions of *children* within each state and each year, rather than the living conditions of the entire population. For each year, we selected records for all children under the age of 18, constructed socioeconomic variables for each child, and then computed estimates of state-level means across children, using the appropriate individual-level survey weights. Each year of the March Current Population Survey contains information on approximately 40,000 to 50,000 children. However, even with samples of these sizes, there are some state-year cells with small

numbers of children. The median number of children per state-year was 562, with a range from 150 (District of Columbia) to 4,210 (California). The state-level statistics include the average of the logarithm of the child's household per capita income, the fraction of children with family income less than 75% of the poverty line, the fraction of children living in urban areas, the fraction of children who are white, black, or of another race, the fraction of children whose mother has less than a high-school diploma, the fraction of children with an employed mother, the fraction with a non-working father, and the fraction with no father in the household. (Few children live in households with no mother, and we excluded these cases.) We also constructed more detailed measures of family structure and employment status. These show the fraction of children in each of six categories, which represent all the combinations of the mother's work status with the father's status. In cases where both a mother and father are present, the possible categories are two working parents, two non-working parents, a working father and non-working mother, or a non-working father and working mother. When only a mother is present, children may be classified as having an absent father and working mother, or an absent father and non-working mother.

Our definitions of "mother" and "father" require discussion. A child's mother is identified in the Current Population Survey by her record number, and we selected only children with mothers present. We do not know whether the mother is biological, adoptive, or step. We defined "father" more broadly, to include biological, step and adoptive fathers, as well as adult men living in the household who are not relatives of the child and are not explicitly identified as the child's father. (Men in this last category are referred to here as "imputed" fathers.) Ideally, we would like to distinguish between children who live with biological and non-biological parents. This is potentially important, given evidence that non-biological parents – step-parents or co-habitants of the parent – are more likely to abuse children (Daly and Wilson, 1996). However, the Current Population Survey does not permit such fine distinctions. We do know that "imputed" fathers are unlikely to be biological fathers, but we do not know whether or not the people identified as

fathers (and mothers) are biological. We examined whether increases in the fractions of children with “imputed” fathers resulted in more maltreatment. These estimated effects of imputed fathers on maltreatment were not statistically different from zero, with large standard errors.

State-level information on drug arrests was drawn from various years of the “FBI Uniform Crime Reports.” State-level information on the number of children in foster care from 1983 to 1996 was obtained from the American Public Welfare Association’s Voluntary Cooperative Information System. Finally, estimates of the numbers of adults and children in different age categories in each state and year were obtained from the web site of the US Census Bureau. Our final data set consists of 920 state-year observations for the years 1977 to 1996 (except 1989). For much of our analysis we make use of a smaller sample of 320 state-year observations that covers the 1990-1996 period, for which information on the numbers of victims of maltreatment is available. Appendix Table A1 provides descriptive statistics on the variables used in our analysis.

B. Methods

The models we estimate are straightforward. For each of the measures of maltreatment, we estimate equations of the form:

$$\ln(y_{st}) = \gamma_s + \delta_t + X'_{st}\beta + e_{st}, \quad (1)$$

where $\ln(y_{st})$ is the logarithm of reports, the logarithm of the substantiation rate, or the logarithm of the number of victims of maltreatment for state s in year t . The term γ_s denotes a set of state fixed effects, and the term δ_t denotes a set of year effects. The vector X_{st} contains a set of controls for the logarithm of the state’s population, the logarithm of the number of children in the state, and the fraction of children in different age categories. It also contains other controls (such as the fraction of children who live in urban areas, the fraction of children in different ethnic groups, and the fraction of children whose mothers do not have a high-school degree), as well as measures of the economic circumstances and family structure of children in the state.

The use of state and year fixed effects is important. A major concern is that the state-level socioeconomic factors in X_{st} may be correlated with unobserved state-specific factors that influence child maltreatment, producing biased parameter estimates. These factors could include things such as (unobserved) parental attitudes or the cost of child care, that genuinely affect the way that children are treated, as well as differences across states in how maltreatment is defined and how strenuously the state enforces its child maltreatment laws. To the extent that these factors are fixed over time, the bias can be eliminated by the inclusion of state fixed effects. Another concern is that the large upward trend in reports of child maltreatment over the 1970s and 1980s will be spuriously correlated with trends in other variables, such as female labor force participation. The inclusion of year effects will sweep out these factors, at least to the extent that they are common across states.

An important issue is measurement error in the right-hand-side variables. A subset of the variables in X_{st} are computed as state-level averages using data from the March Current Population Survey, and these averages are imprecise measures of the true state averages. Without correcting for sampling error in the right-hand-side variables, the estimates of (1) will be biased. Furthermore, the inclusion of fixed effects is likely to make the biases associated with measurement error worse. However, this form of bias due to measurement error is straightforward to fix. As shown in Deaton (1985), the bias in the parameter estimates is a function of the variances and covariances of the state-level means constructed from the Current Population Survey. These variances and covariances can be estimated from the micro data, and used to adjust the parameter estimates for bias. Specifically, let Z_{st} denote the vector of state dummies, year dummies, and all elements of X_{st} that are on the right-hand-side of (1), and α denote the vector of coefficients including the fixed effects and β , so that equation (1) can be expressed as:

$$\ln(y_{st}) = Z'_{st} \alpha + e_{st}, \quad (2)$$

Only a subset of the elements in Z_{st} , were calculated from the Current Population Survey, and assume that only these variables are subject to sampling error. (Although the Census Bureau's

inter-censal population estimates are measured with some error, we do not have the information necessary to correct for any resulting biases.) Assume that the observed values of $\ln(y_{st})$ and Z_{st} are jointly normally distributed with means equal to their true values:

$$\begin{pmatrix} \ln(y_{st}) \\ Z_{st} \end{pmatrix} \sim N \begin{pmatrix} \ln(y_{st})^* & \sigma_0 & 0 \\ Z_{st}^* & 0 & \Sigma \end{pmatrix}. \quad (3)$$

The term σ_0 is the error variance of the dependent variable, and Σ is the variance-covariance matrix of Z . The appropriate rows and columns of Σ are set to zero for the elements of Z that are assumed to be measured without error (i.e. the fixed effects and the independent variables not calculated from the Current Population Survey.) A consistent estimator of α is:

$$\tilde{\alpha} = (Z'Z - N\Sigma)^{-1} Z'\ln(y), \quad (4)$$

where N is the number of observations, and Σ is replaced by its estimate from the micro data. Deaton (1985) contains the relevant formula for Σ and for the standard errors of the estimates. As we shall see below, these corrections for bias due to sampling error typically had very large effects, often increasing the size of fixed-effects estimates by more than 50%.

IV. Poverty, Parental Employment, Family Structure and Maltreatment

The first question we address is whether *reports* of maltreatment are associated with the economic conditions of children's families. Regression results based on data from 1977 to 1996 (excluding 1989) are in Table 1. We use these results to illustrate the importance of including state fixed-effects and adjusting for bias due to sampling error.

The first column of Table 1 reports parameter estimates from a regression that does *not* include state fixed-effects (although year effects are included), and does not adjust for bias due to sampling error. These results indicate large and significant effects of socioeconomic factors on reports. The fractions of children who are black and from other non-white (mostly Hispanic) ethnic backgrounds have negative effects on reports. These effects are large: they imply that an

increase in the fraction of children who are black from 0.05 to 0.10 would reduce reports of child maltreatment by about 5.5%. Increases in average incomes reduce reports—although contrary to other research on reports of child maltreatment, the fraction of children in extreme poverty is negatively related to reports. There are also large, positive, and significant effects of the fraction of children living in families with working mothers (relative to those with non-working mothers), and with absent fathers or unemployed fathers (relative to working fathers). The effects of fathers' status are especially large: an increase in the fraction of children with absent or non-working fathers of 0.05 is estimated to produce an increase in reports of over 11%.

How does bias adjustment and the inclusion state fixed-effects affect the results? The second column continues to exclude state fixed effects, but shows bias-adjusted parameter estimates. Bias adjustment generally increases the coefficients (in absolute value), sometimes by as much as 30%. The t-values are largely unchanged. Adding state fixed effects (third column) and then fixed effects with bias adjustment (fourth column) has additional effects. First, the introduction of state fixed effects eliminates the negative effect of “fraction of children who are black” on reports of maltreatment: although states with larger fractions of black children have fewer reports of maltreatment, within-state changes in the fraction of children who are black have positive but insignificant effects on reports. Second, the formerly large and significant effects of absent father and non-working fathers also vanish with the introduction of state fixed effects. In the fourth column, the only socioeconomic variables (other than the variables that measure the age structure of the population) that are significant are average income, which continues to have a negative effect on reports, and mother's employment, which has a positive effect. Third, the bias adjustments have even larger effects when fixed effects are included, increasing some coefficients (in absolute value) by more than 50%.

In general, our results without fixed effects are largely consistent with previous work on the determinants of reports of maltreatment, whereas our fixed effects results are not. Previous research, based largely on small cross-sections of data on individual children, has concluded that

children who are poor, have unemployed fathers, or live with single mothers are more likely than others to be reported to their states' child protective service agencies (see, for instance, Gil, 1970; Hampton and Newburger, 1985; Lindsey, 1994; Zellman, 1992). There is also evidence from community studies that children living in poor areas are more likely to be reported to CPS, as are children from communities with higher levels of unemployment or lone parenthood (see Ards, 1989; Coulton, Korbin, Su, and Chow, 1995; Drake and Pandey, 1996; Garbarino, 1976; Garbarino and Kostelny, 1992; Garbarino and Sherman, 1980; Spearly and Lauderdale, 1983; and Steinberg, Catalano, and Dooley, 1981). However, our results indicate that these relationships in cross-sectional or community studies do not hold up in a national sample observed over the time period during which many of these studies were conducted.

Reports of maltreatment may be quite inaccurate measures of true maltreatment. Numbers of reports are subject to changes in reporting requirements, and to changes in public awareness of child maltreatment. Given that around 60% of reports are not substantiated, it is quite possible that socioeconomic factors that are not associated with reports may be associated with the number of substantiated victims of maltreatment. In Table 2, we use data from 1990-1996 to trace through the effects of socioeconomic factors on reports, substantiation rates, and the number of victims of different types of maltreatment. The top panel of Table 2 shows results from regressions with a specification identical to that in the last column of Table 1 (i.e. fixed effects are included, and bias adjustments are made throughout.)

The first point to note is that the relationships between income, poverty, and parental status and reports of maltreatment for 1990-1996 are different than they were for the 1977-1996 period. The effect of income on reports is no longer significant, although increases in extreme poverty are now positively and marginally significantly associated with more reports. The fraction of children with working mothers no longer has a large and significant effect on reports, whereas the fraction of children with non-working fathers now does. There are several possible reasons for these changes. First, it may be that the factors that influence reports of maltreatment have changed

over time. For example, mothers who worked might have been perceived to be more neglectful in the 1970s and early 1980s, when work was less common, but that an increased acceptance of working mothers has reduced this effect. It could also be that the development of after-school programs and other child-care programs designed to help working parents has genuinely reduced the amount of maltreatment formerly produced by mothers' employment. Second, the system of child protective services was rapidly expanding and evolving during the 1970s and 1980s. It is possible that the factors that prompted changes in state laws that resulted in greater reports were correlated with variables such as women's labor force participation or single-parenthood, producing biased parameter estimates. By 1990, the systems of child protective services in most states had stabilized, and the large increase in report rates that marked the 1970s and 1980s was essentially complete. The evidence from the 1990-1996 period is much less likely to suffer from bias due to correlation of changes in laws and practices regarding child maltreatment with changes in states' economic and demographic structure.

The second and third columns of the top panel of Table 2 indicate that the socioeconomic characteristics of families do affect the substantiation rate, and that several of the factors that are not significantly related to reports are significantly related to the number of victims. (Note that the marginal effect of any variable on the logarithm of victims must be equal to the sum of its effects on the logarithm of reports and the logarithm of the substantiation rate.) Increases in average per capita incomes and in the fraction of children in extreme poverty are positively related to the substantiation rate and the number of victims. That higher average incomes (holding the poverty rate fixed) result in higher substantiation rates may reflect the fact that states can afford to substantiate more cases during good economic times. The effects of poverty on victims is large: an increase in the fraction of children in extreme poverty from 0.10 to 0.15 increases the numbers of victims by 22%. Increases in the fractions of children with absent and non-working fathers are also associated with large and significant increases in the numbers of victims.

The final four columns of Table 2 (top panel) break the numbers of victims into specific types of maltreatment. The general pattern—that increases in poverty, absent fathers, and unemployed fathers are associated with more maltreatment—is true for most of the individual types of maltreatment. However, there are some important differences. As might be expected, poverty has a bigger impact on neglect than on physical abuse. “Absent fathers” have larger effects on physical abuse than neglect. The greater impact of “absent fathers” on physical abuse could be due to a variety of factors: single mothers could be more likely to physically abuse their children, or children with single mothers could be more often left in the care of others who physically abuse them. We cannot distinguish between these alternative interpretations without breakdowns of the sex of perpetrators and their relationship to the victim by the type of maltreatment—information states do not include in their summary data reports to NCCAN. The largest effects of poverty, absent fathers, and unemployed fathers are for the rather uninformative category of “other” types of maltreatment. Since “other” includes, for many states, substance-exposed newborns, we examine below whether drug use in a state accounts for these results.

It is likely that the status of fathers and mothers operate jointly to influence child maltreatment. For example, the effects of absent fathers may be different when mothers do or do not work. In the bottom panel of Table 2 we include measures of the fractions of children in each of five categories that represent different combinations of the mother’s and father’s status. The sixth, omitted, category is the fraction of children with working fathers and non-working mothers. Using this more complete specification yields the following results:

First, the effects of poverty on all types of maltreatment become larger, and the difference between the effects of poverty on neglect and physical abuse increases.

Second, the positive effects of higher shares of children living in an absent-father families on physical abuse and neglect are apparent *only* when single mothers work, but not when they stay at home. This finding is consistent with working single mothers being more neglectful or abusive, or with the children of working single mothers being left in inadequate care. The estimated effect

of moving a single mother from non-work to work is quite large. For example, the results imply that a shift of one percent of children from the category of “absent father, non-working mother” to “absent father, working mother” is associated with an increase in substantiated cases of physical abuse of 6.6%, and an increase in neglect of 12.6%.

Third, higher fractions of children with non-working fathers and working mothers are not associated with more maltreatment of any type, although higher fractions of children with two unemployed parents have large effects on all types of maltreatment. To the extent that the fraction of children in extreme poverty and average per capita income do not adequately control for family income, this result could be due to the lower income of children with two non-working parents. Alternatively, families with two non-working parents could be subject to more stress that results in more maltreatment, or could have other problems (such as mental illness or substance abuse) that are related both to unemployment and maltreatment.

Finally, the relationship between parental status and numbers of victims in the category “other” are quite different from the relationships for other types of victims. For example, greater fractions of children with absent fathers and non-working mothers are associated with large increases in victims of “other” types of maltreatment.

The rise in maltreatment in the 1980s has often been attributed to drug use, and in particular to the rise in the use of crack cocaine. In many states, newborns found to be exposed to cocaine were automatically counted as substantiated victims of child maltreatment (and usually classified in the category “other”). Parental drug use may also result in worse parenting of older children. Furthermore, it may be that some of the family characteristics we are interested in may be correlated with drug use, and it is useful to examine whether controlling for drug use changes our previous results. Ideally, we would include controls for the fraction of children whose parents use illegal drugs, or even better for the prices of illegal drugs, but this information is difficult to

obtain.² Instead, we include measures of the logarithm of the numbers of adult men and adult women who were arrested and charged with cocaine possession. (We also experimented with controlling for arrests for possession of any type of drugs, with similar results.)

The results in Table 3 show mixed support for the hypothesis of a link between cocaine use and maltreatment. When state fixed effects are not included, there is a positive and significant relationship between female cocaine possession and all types of maltreatment except for sexual abuse. Male cocaine possession has a negative effect, but it is not significant for any category except “other.” However, the relationship between female cocaine possession and maltreatment disappears with the inclusion of state fixed effects, for all categories except “other.” The fact that female cocaine use remains positively related to “other” forms of maltreatment makes sense, given the often mechanical link between substance exposure for newborns and substantiation.

The change in results when state fixed effects are included could be due to several factors. It is possible that a state’s arrests for female cocaine possession is related to (fixed) state characteristics that are positively related to maltreatment. Under this interpretation, the positive relationship between female cocaine use and maltreatment when fixed effects are not included is spurious, and cocaine use actually has no effect on physical abuse, sexual abuse, or neglect. However, it is also possible that the number of female cocaine arrests is a noisy measure of true maternal cocaine use, and adding state fixed effects may exacerbate attenuation bias due to measurement error. In either case, however, controlling for cocaine arrests does not account for the large effects of non-working mothers and absent fathers, and two non-working parents, on “other” types of maltreatment.

The most extreme cases of child maltreatment result in removal of children from their homes, usually to foster care. Using data from 1983 to 1996, we examine whether the factors that

²Markowitz and Grossman (1998) present evidence that states that have higher alcohol prices have greater rates of physical child abuse, and with prices of illegal drugs a similar analysis could be conducted here.

influence child maltreatment have similar effects on changes in the number of children in foster care. The results of regressions of the logarithm of the number of children in foster care on the same variables included in previous regressions are in Table 4, with and without controls for cocaine possession. These results indicate that, although higher poverty is positively associated with higher net flows into foster care, the effects of family characteristics on foster care differ from their effects on the various measures of maltreatment. For example, the effect of moving children from the omitted category of “working father and non-working mother” to the category “absent father and non-working mother” is to *reduce* the number of children in foster care. And, although the presence of two working parents was not associated with less maltreatment, it is associated with smaller numbers in foster care. Still, some of the earlier patterns appear here: moving the mothers of children with absent fathers from non-work to work increases foster care, just as it increases maltreatment.

One possible reason for the negative relationship between the fraction of children with absent fathers and non-working mothers and foster care is that foster care may serve as a substitute for welfare. Foster care is often provided by relatives of the child (and in fact states are currently required to give priority to placement with relatives), and these foster families may receive payments as foster families that exceed the welfare benefits the mother could have qualified for had she retained the child in her own care—providing families in states with low welfare benefits with incentives to place children in foster care in relative’s homes.³ In columns (3) and (4), we control for the logarithm of the state’s maximum AFDC and Food Stamp benefit for a family of four. Although the benefit level has a negative effect on foster care, the effect is not significant, and its inclusion does not alter the previous results. Nor do the results change when

³ Although they do not look at foster care per se, studies by Brandon (1999) and Brandon and Fisher (1999), using the SIPP, find that children living in states with low welfare benefits are more likely to be living away from their parents.

we control for cocaine arrests (in column 4) or when we restrict our sample to the 1990-1996 time period used in Tables 2 and 3 (in column 5).

There are two other explanations for the differences in the results for foster care and for other types of maltreatment. One is that the placement of children into foster care requires the availability of a host foster family, and the number of host families may be influenced by family structure within a state. In addition, children are placed into foster care for a variety of reasons. Only about 50% of placements occur for protective service reasons; the remainder involve delinquency, a child's disability, or other reasons (APWA, 1996). These other types of placements may respond differently to socioeconomic factors than placements due to maltreatment.

V. Welfare, Welfare Reform, and Child Maltreatment

In this section we examine how the structure and generosity of states' welfare systems has influenced child maltreatment in the past, and assess how the recent welfare reforms may affect child maltreatment in the future. Given the profile of families who are most likely to come to the attention of CPS—poor, single parent, or two-parent with an unemployed father—it is perhaps not surprising that there is a great deal of overlap between families who are on welfare and families who are involved with the child welfare system. About half of families referred to CPS are receiving welfare at the time of the referral, and more than half have received welfare in the past (American Association for the Protection of Children, 1987; Lindsey, 1994; Pelton, 1994). The share of foster children who come from families on welfare is high as well. A recent study in Illinois found that about 40 percent of children placed into foster care came from families that were on welfare at the time of the placement, with a further 20 percent from families that had been on welfare recently, a much higher share than might be expected given that only about 15 percent of children in Illinois lived in families that were receiving welfare (Shook, 1998). At any moment in time, though, the percentage of families on welfare who are referred to CPS or have children placed into foster care is much lower. A recent Chicago study, for instance, found that only 4

percent of families on welfare became involved with the child welfare system over a sixteen-month period, with an additional 24 percent having been involved with child welfare in the past (Shook, 1999).

How should the size and structure of welfare programs affect child maltreatment? We first consider the effects of decreases in a state's benefit level. Holding family structure and parental employment status fixed, decreases in a state's welfare benefits should increase poverty among children—and our previous results indicate that increases in poverty increase maltreatment. However, the generosity of welfare benefits may also affect the labor supply decisions of parents (and hence the incomes of children's families), change the fractions of children whose parents do and do not work, and alter the decisions of parents to live with or without a partner. The effects of changes in benefits on maltreatment will depend on how large the different incentive effects are, something that is the topic of a great deal of research. A summary by Hoynes (1996) concludes that the welfare system in the US has produced modest work disincentives, accounting for about half of the difference in work effort between recipients and non-recipients of welfare, but has had very small effects on family structure and fertility decisions (see also Moffitt, 1998, on this latter point). However, even if the only effects of changes in benefit levels are to change work incentives, the predicted effects of changes in benefits on maltreatment (given our previous results) is still ambiguous. Lower benefits will decrease the incomes of those already on welfare, but could result in higher incomes for families whose work effort increases in response to the decrease in generosity. The net result could be an increase or decrease in the fractions of children in poverty. Lower benefits may move single mothers into employment (predicted to increase maltreatment, holding income constant) but may also result in fewer children with two non-working parents (predicted to decrease maltreatment.)

Changes in eligibility rules for welfare may also affect maltreatment. The effects of changes in eligibility are of special interest given the recent reforms in the US welfare system. At the federal level, the passage of the Personal Responsibility and Work Opportunity Reconciliation

Act (PRWORA) in 1996 imposed a five-year lifetime time limit on families' eligibility for federally funded cash assistance, replacing the previously open-ended Aid to Families with Dependent Children program (AFDC) with the tellingly named Temporary Assistance to Needy Families program (TANF). The federal law also required many single mothers to work as a condition of receiving welfare. Reforms at the state level, which in many instances preceded the federal reforms in 1996,⁴ may impose even shorter time limits and tighter work requirements, and families who do not comply with work or other program requirements may be "sanctioned", i.e., may lose all or part of their cash benefits. As a result, child welfare analysts have raised concerns about the potential impacts of both the federal and state reforms on referrals to CPS (see, for instance, Besharov, 1997; Courtney, 1997; and Waldfogel, 1998). Waivers that have the effect of forcing people off of AFDC and into employment could in principle increase or reduce maltreatment. Depending on what jobs former welfare recipients find, incomes could rise or fall. In addition, we might expect to find positive effects for a child if the mother was happy with her job, had a more stable source of income, and a more extensive social network. However, there might also be negative effects, if the mother was stressed by her job, had more difficulty making ends meet due to work expenses, and had less energy available for the child at the end of the day. The effect on the child would also depend on the quality and stability of the setting where the child was cared for while the mother was at work.

There is some evidence that work requirements and time limits adopted between 1992 and 1996, prior to the PRWORA, have had effects. Recent work by Moffitt (1999) indicates that states that adopted stricter work requirements and time limits also experienced increases in the labor supply of women, especially those with low levels of education. However, these results should be

⁴ States were allowed to implement reforms prior to the passage of the new federal law, if they obtained a "waiver" from the federal government. In 1992, six states had obtained one or more waivers related to work requirements, time limits, work incentives, or child support enforcement; by 1996, all but six had (Ziliak et al, 1997).

treated with some caution: in work on the effects of waivers on AFDC caseloads, Blank (1997) presents evidence that the adoption of waivers was correlated with other (unobserved) factors that affected caseloads. For example, caseloads appear to decline prior to the implementation of waivers. Although we control for waiver adoption in the results that follow, a persuasive analysis of the effects of waivers on maltreatment will require a long span of data from the post-PRWORA period.

To analyze the relationship between welfare and maltreatment, we combined state-level information on maltreatment up to 1996 with information on welfare benefit levels (we use the logarithm of the maximum welfare benefit including cash and Food Stamps for a family of four), and with information on whether the state had an AFDC-UP program, and whether it had received any type of waiver allowing it to impose stronger work requirements, work incentives, or time limits for the receipt of AFDC in the years prior to 1996. These data are used to establish that the characteristics of states' welfare systems do in fact influence the types of families in which children live, and to assess the effects of states' welfare systems on child maltreatment.

First, we establish that the characteristics of welfare programs have an effect on employment and living arrangements of children's parents. The top panel of Table 5 uses data from 1977 to 1996, and examines the relationships between welfare program characteristics, the fraction of children living in different types of families, and the fraction of children in extreme poverty. The dependent variable for the first five columns is the logarithm of the fraction of children in the specified family type minus the logarithm of the fraction in the omitted category (a working father and non-working mother.) Besides the welfare measures, we also include controls for a variety of children's characteristics (ethnicity, urbanization, mother's education, etc.) that are plausibly not affected by the welfare system, and a set of year and state dummies. The welfare measures are all lagged one year, on the theory that behavioral responses to changes in the welfare system take time to occur.

The results confirm that characteristics of state welfare systems affect the distribution of children across families of different types, in ways that make sense. Higher benefit levels increase the fraction of children in “absent father/non-working mother” households, relative to the omitted category as well as relative to the “absent father/working mother” category. (The coefficients on the logarithm of benefits in the first and second column are significantly different from each other, with a t-statistics of 3.37). States that adopted AFDC-UP programs experienced declines in the fractions of children living in households with non-working fathers and working mothers relative to those with two non-working parents. Although no state had a waiver to impose stronger work requirements or time limits prior to 1992, there is weak evidence that waivers are associated with work behavior. States that adopted waivers experienced increases in the fractions of children with absent fathers and working mothers. However, the evidence that the mothers of children with absent fathers have switched from non-work to work is less strong. Although the difference in the coefficient on “any waiver” between column 1 (father absent/mother works) and column 2 (father absent/mother home) is .078, the hypothesis that this difference is zero cannot be rejected, with a t-statistic of only 1.07.

The effects of welfare on extreme poverty are in the last column. The benefit level and waiver measures are not significantly related to poverty. However, the adoption of AFDC-UP programs is associated with a significant *increase* in poverty. Although this is possible in theory (if AFDC-UP provides incentives to leave work) it may also be that states with more serious child poverty problems were more likely to adopt AFDC-UP programs early. Several other studies have reported “perverse” effects of the presence of an AFDC-UP program (see, for instance, Hoynes, 1997; Blau, Kahn, and Waldfogel, 1999).

How have the characteristics of states’ welfare systems affected maltreatment? To answer this question, we use data from the 1990-1996 time period, for which information on substantiated victims is available. The results are in the bottom panel of Table 5, which show regressions of the logarithm of reports, victims, and victims of different types of maltreatment on the welfare benefit

level and whether the state had a waiver, plus state effects, year effects, and other controls listed in Table 5. (The variable AFDC-UP is excluded because all states had these programs by 1990.) The major result is that welfare benefit levels are negatively related to neglect and to foster care, and these effects are large and significant. A ten-percent increase in the maximum welfare benefit for a family of four is predicted to reduce neglect by thirty-nine percent, and to decrease the foster care population by nearly twenty percent. The results of the top panel indicate that these effect do *not* work through reductions in the fraction of children in poverty: higher welfare benefits do not appear to produce poverty declines. However, increases in welfare benefits do result in increases in the fractions of children with absent fathers and non-working mothers relative to those with absent fathers and working mothers, and our previous results indicate this will reduce neglect and foster care. The negative relationship between benefit levels and neglect and foster care do not appear for the other types of maltreatment. Benefit levels are positively related to physical and sexual abuse, although these effects are smaller and are not precisely estimated.

The results indicate that the adoption of waivers has been associated with *declines* in maltreatment. These effects are large and significant for physical abuse (8.8% decline) and sexual abuse (13.0% decline). This is somewhat surprising, given that the waivers appear to be positively related to movements of children into families with absent fathers and working mothers, which based on our previous analysis should have worsened these types of abuse. Furthermore, waivers were not associated with decreases in poverty. Again, it is possible that (unobserved) factors within states that prompted the early adoption of waivers are correlated with maltreatment outcomes. Until we have data for more years in which waivers have been in effect, we cannot place much faith in the negative effect of waivers on maltreatment.

VI. Conclusion

Using state-level panel data, we find that socioeconomic circumstances, in particular income, parental work status, and single parenthood, affect the incidence of child maltreatment.

States with higher fractions of children living below 75% of poverty have higher rates of child maltreatment, as do states with higher shares of children with absent fathers, especially those with absent fathers and working mothers, or higher shares of non-working fathers.

Our result that cuts in state's welfare benefits increase child neglect is particularly troubling, in light of the recent reforms in the US welfare system. The TANF provisions in many states call for reductions in benefit levels for recipients who do not work, or who have additional children. The children of mothers who receive these cuts will be at a heightened risk of neglect. Whether the time limits of welfare will increase or reduce maltreatment is still unknown: the children of women who manage to find good jobs and high-quality child care may see improvements. Yet, our result that, holding income fixed, the children of women who work are at greater risk of maltreatment than those who do not suggests that moving women off of welfare rolls into jobs that do not pay more than welfare could harm children.

Although the well-being of children is the primary concern, attention must also be paid to the stresses that welfare reform may place on the child welfare system. Increases in reports of maltreatment will require that more resources be put into Child Protective Services if the quality level of services is to be maintained. Furthermore, there is concern that CPS will become overburdened as it takes up some of the functions of the welfare system. CPS has a history of serving as a resource provider of last resort: Linda Gordon (1988) notes in her analysis of child welfare agency records from the late 1800s and early 1900s that poor mothers often referred themselves to child protection as a way of getting help, and it is still the case today that CPS acts in some areas as the gateway to financial or other forms of assistance that poor families might need to keep their family together. The fact that children voluntarily given up to foster care can be placed with relatives, thereby providing the extended family with resources in the form of foster-care payments, may provide additional incentives for self-reporting. Further strains on the child welfare system may appear if families who are sanctioned for failing to comply with work or other program requirements are automatically reported to CPS for neglect on the grounds that they have

not taken the steps necessary to provide an adequate source of income for the children. Douglas Besharov (1997) argues that states and local welfare agencies may adopt such policies, because having become aware of parents' inability to comply with requirements, they will be unable to ignore it. Although it is too early to determine whether any or all of these effects will materialize, assessments of the success of the TANF program should include analyses of spillover effects on the child welfare system.

VII. References

- American Association for the Protection of Children (1987). Highlights of Official Child Abuse and Neglect Reporting - 1986. Denver: American Humane Association.
- American Public Welfare Association (APWA) (1996). "VCIS Data: Reasons Children Entered Substitute Care for FY84 through FY94". Washington, DC: APWA.
- Ards, Sheila (1989). "Estimating Local Child Abuse." Evaluation Review, 13, pp. 484-515.
- Besharov, Douglas (1997). "Child Protective Services Under Welfare Reform." Eighth Annual Nanette Dembitz Memorial Lecture, New York City, April.
- Blank, Rebecca (1997). "What Causes Public Assistance Caseloads to Grow?" NBER Working Paper #6343.
- Blau, David (1999). "The Effect of Income on Child Development." Review of Economics and Statistics, 81(2), pp. 261-276.
- Blau, Francine, Lawrence Kahn, and Jane Waldfogel (1999). "The Impact of Welfare Benefits on Female Headship: Evidence from the Census". Mimeo, Cornell University and Columbia University.
- Brandon, Peter (1999). "Did the Aid to Families with Dependent Children Program Succeed in Keeping Mothers and Children Living Together?" Mimeo, University of Massachusetts-Amherst.
- Brandon, Peter and Gene Fisher (1999). "The Dissolution of Joint Living Arrangements among Single Parents and Children: Does Welfare Make a Difference?" Mimeo, University of Massachusetts-Amherst.

- Brooks-Gunn, Jeanne and Greg Duncan (1997). "The Effects of Poverty on Children." The Future of Children, 7(2), pp. 55-71.
- Cicchetti, Dante and Vicki Carlson (eds) (1989). Child Maltreatment: Theory and Research on the Causes and Consequences of Child Abuse and Neglect. New York: Cambridge University Press.
- Corcoran, M., R. Gordon, D. Laren and G. Solon (1992). "The Association Between Men's Economic Status and their Family and Community Origins," The Journal of Human Resources 27(4), pp. 575-601.
- Coulton, Claudia, Jill Korbin, Marilyn Su, and Julian Chow (1995). "Community Level Factors and Child Maltreatment Rates." Child Development, 66, pp. 1262-1276.
- Courtney, Mark (1997). "Welfare Reform and Child Welfare Services." In Alfred Kahn and Sheila Kamerman (eds). Child Welfare in the Context of Welfare "Reform". New York: Cross National Research Studies Program, Columbia University School of Social Work.
- Daly, Martin and Margo Wilson (1996). "Violence Against Step-Children." Current Directions in Psychological Science, 5, pp. 77-81.
- Deaton, Angus (1985). "Panel Data From Time Series of Cross-Sections." Journal of Econometrics, 30, pp. 109-126.
- Drake, Brett and Shanta Pandey (1996). "Understanding the Relationship between Neighborhood Poverty and Specific Types of Maltreatment." Child Abuse and Neglect, 20, pp. 1003-1018.
- Garbarino, James (1976). "A Preliminary Study of Some Ecological Correlates of Child Abuse: The Impact of Socioeconomic Stress on Mothers." Child Development, 47, pp. 178-185.
- Garbarino, James and Kathleen Kostelny (1992). "Child Maltreatment as a Community Problem." Child Abuse and Neglect, 16, pp. 455-464.
- Garbarino, James and Deborah Sherman (1980). "High-Risk Neighborhoods and High-Risk Families: The Human Ecology of Child Maltreatment." Child Development, 51, pp. 188-198.
- Gaudin, James (1993). Child Neglect: A Guide for Intervention. Washington: U.S. Department of Health and Human Services.
- Gil, David (1970). Violence Against Children. Cambridge: Harvard University Press.

- Goldsmith, A., J. Veum and W. Darity (1996) "The Psychological Impact of Unemployment and Joblessness." Journal of Socioeconomics, 25(3), pp. 333-58.
- Gordon, Linda (1988). Heroes of Their Own Lives: The Politics and History of Family Violence. New York: Penguin.
- Hampton, Robert and Eli Newburger (1985). "Child Abuse Incidence and Reporting by Hospitals: Significance of Severity by, Class, and Race." American Journal of Public Health, 75, pp. 56-60.
- Hill, Martha and Greg Duncan (1987). "Parental Family Income and the Socioeconomic Attainment of Children." Social Science Research, 16(1), pp. 37-73.
- Hoynes (1996). "Work, Welfare and Family Structure: What have We Learned?" NBER Working Paper #5644.
- Hoynes (1997). "Does Welfare Play Any Role in Female Headship Decisions?" Journal of Public Economics 65: 89-117.
- Kaufman, Joan and Edward Zigler (1987). "Do Abused Children Become Abused Parents?" American Journal of Orthopsychiatry, 57, pp. 186-192.
- Lindsey, Duncan (1994). The Welfare of Children. New York: Oxford University Press.
- Markowitz, Sara and Michael Grossman (1998). "Alcohol Regulation and Violence Toward Children." NBER Working Paper No. 6359.
- Mayer (1997). What Money Can't Buy: Family Income and Children's Life Chances. Cambridge: Harvard University Press.
- Moffitt, Robert (1999). "The Effects of Pre-PRWORA Waivers on AFDC Caseloads and Female Earnings, Income and Labor Force Behavior." manuscript.
- Moffitt, Robert (1998). "The Effects of Welfare on Marriage and Fertility: What Do We Know and What Do We Need to Know?" In Robert Moffitt (ed.). The Effect of Welfare on the Family and Reproductive Behavior. Washington, D.C.: National Research Council.
- Paxson, Christina and Jane Waldfogel (1999). "Parental Resources and Child Abuse and Neglect." American Economic Review Papers and Proceedings, 89(2), pp. 239-44.
- Pelton, Leroy (1994). "The Role of Material Factors in Child Abuse and Neglect." Pp. 131-181 in Gary Melton and Frank Barry (eds). Protecting Children from Abuse and Neglect. New York, NY: Guilford Press.

- Richards, Edward and Katherine Rathbun (1999). Law and the Physician: A Practical Guide. Boston: Little, Brown and Company.
- Ruhm, Christopher (1999). "Are Recessions Good For Your Health?" NBER Working Paper #5570.
- Shea (1999). "Does Parents' money Matter?" Forthcoming in Journal of Public Economics.
- Shook, Kristen (1998). "Assessing the Consequences of Welfare Reform for Child Welfare." Poverty Research News: The Quarterly Newsletter of the Joint Center for Poverty Research, 2(1), pp. 8-12.
- Shook, Kristen (1999). "Does the Loss of Welfare Income Increase the Risk of Involvement with the Child Welfare System?" Mimeo, University of Michigan.
- Spearly, James and Michael Lauderdale (1983). "Community Characteristics and Ethnicity in the Prediction of Child Maltreatment Rates." Child Abuse and Neglect, 7, pp. 91-105.
- Starr, Raymond and David Wolfe (eds) (1991). The Effects of Child Abuse and Neglect: Issues and Research. New York: Guilford Press.
- Steinberg, Lawrence, Ralph Catalano, and David Dooley (1981). "Economic Antecedents of Child Abuse and Neglect." Child Development, 52, pp. 975-985.
- U.S. Department of Health and Human Services, National Center for Child Abuse and Neglect (1996). Child Maltreatment 1994. Washington, DC: U.S. Government Printing Office.
- U.S. Department of Health and Human Services, National Center for Child Abuse and Neglect (1998). Child Maltreatment 1996. Washington, DC: U.S. Government Printing Office.
- Waldfoegel, Jane (1998). The Future of Child Protection: How to Break the Cycle of Abuse and Neglect. Cambridge: Harvard University Press.
- Widom, Cathy (1989). "The Cycle of Violence." Science, 244, pp. 160-166.
- Zellman, Gail (1992). "The Impact of Case Characteristics on Child Abuse Reporting Decisions." Child Abuse and Neglect, 16, 57-74.
- Ziliak, James, David Figlio, Elizabeth Davis, and Laura Connolly (1997). "Accounting for the Decline in AFDC Caseloads: Welfare Reform or Economic Growth?" Discussion Paper 1151-97, Institute for Research on Poverty, Madison, Wisconsin.

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Table 1: Reports of child maltreatment, 1977–1996.

	No FE		No FE+bias adj.		FE		FE+bias adj.	
ln(population)	0.665	(2.75)	0.550	(2.13)	0.111	(0.14)	0.160	(0.20)
ln(population aged less than 18)	0.261	(1.09)	0.387	(1.51)	0.729	(1.08)	0.720	(1.01)
fraction children aged 3–4	–31.74	(3.97)	–30.82	(3.78)	–13.05	(2.16)	–14.45	(2.33)
fraction children age 5–13	–13.69	(6.64)	–13.72	(6.58)	–7.080	(3.62)	–7.861	(3.92)
fraction children 14–17	–16.93	(5.00)	–16.59	(4.81)	–6.248	(2.38)	–7.226	(2.69)
fraction of children urban	0.027	(0.29)	0.015	(0.15)	–0.142	(1.54)	–0.137	(1.44)
fraction of children black	–1.108	(5.82)	–1.385	(5.90)	0.646	(1.48)	0.905	(1.38)
fraction of children non– white/non–black	–1.449	(8.32)	–1.546	(8.36)	–0.572	(0.93)	–0.643	(0.76)
mean ln(per capita income)	–0.752	(4.18)	–0.846	(3.99)	–0.773	(3.95)	–1.064	(3.91)
fraction of children below .75(poverty line)	–1.161	(1.73)	–1.513	(1.74)	–0.828	(1.55)	–1.095	(1.39)
fraction with mother without high school degree	0.348	(1.17)	0.329	(0.97)	–0.181	(0.60)	–0.284	(0.70)
fraction of children with a working mother	0.712	(2.56)	0.979	(2.86)	0.624	(2.31)	0.966	(2.33)
fraction of children with an absent father	2.323	(4.58)	3.242	(4.63)	0.055	(0.13)	0.078	(0.11)
fraction of children with a non–working father	2.291	(5.56)	2.755	(5.64)	0.228	(0.55)	0.326	(0.55)

Note: Dependent variable is ln(families reported for abuse and neglect). Absolute t–statistics in parentheses. Year dummies included in all equations. The sample has 941 observations, and includes years 1977–1996 except 1989. The “fixed effects” equations. Labeled “FE” include a set of state dummies.

Table 2: Reports and victims of maltreatment, 1990–1996

All dependent variables are in logarithms	reports	substantia- tion rate	total victims	physical abuse	neglect	sexual abuse	other abuse
mean ln(per capita income)	0.153 (0.64)	1.066 (2.47)	1.219 (2.52)	0.815 (1.62)	0.759 (1.02)	1.619 (3.20)	2.713 (1.69)
fraction of children below .75(poverty line)	1.101 (1.76)	3.229 (2.84)	4.330 (3.39)	2.579 (1.95)	3.348 (1.71)	3.706 (2.75)	7.858 (1.82)
fraction of children with a working mom	0.315 (0.81)	-0.260 (0.37)	0.055 (0.07)	-0.518 (0.63)	1.159 (0.95)	-1.122 (1.32)	0.342 (0.15)
fraction of children with an absent dad	0.828 (1.67)	1.341 (1.50)	2.169 (2.16)	2.239 (2.15)	1.760 (1.14)	1.939 (1.85)	13.259 (3.77)
fraction of children with a non–working dad	1.739 (3.01)	0.825 (0.80)	2.564 (2.22)	1.914 (1.59)	2.222 (1.25)	1.128 (0.93)	8.602 (2.30)
mean ln(per capita income)	0.158 (0.64)	1.267 (2.63)	1.425 (2.63)	1.065 (1.80)	1.132 (1.37)	1.768 (3.25)	2.428 (1.45)
fraction of children below .75(poverty line)	1.356 (1.88)	4.576 (3.21)	5.932 (3.67)	4.466 (2.54)	6.492 (2.64)	3.713 (2.34)	5.991 (1.18)
fraction with a working mom/absent dad	1.307 (1.69)	3.036 (2.02)	4.342 (2.54)	4.293 (2.31)	6.900 (2.60)	1.727 (0.97)	10.327 (1.99)
fraction with non–working mom/absent dad	0.296 (0.35)	-1.960 (1.18)	-1.663 (0.89)	-2.316 (1.11)	-5.743 (1.97)	1.566 (0.86)	18.848 (3.33)
fraction with working mom/non–working dad	2.296 (2.29)	-2.418 (1.23)	-0.121 (0.06)	-2.318 (0.88)	-1.509 (0.45)	-2.672 (1.22)	12.981 (1.28)
fraction with non–working mom and dad	1.252 (1.30)	3.954 (2.06)	5.205 (2.39)	5.312 (2.20)	6.575 (1.96)	5.030 (2.13)	5.655 (0.80)
fraction with working mom/working dad	0.045 (0.10)	-0.816 (0.93)	-0.771 (0.79)	-1.446 (1.34)	-0.584 (0.39)	-0.470 (0.48)	1.377 (0.56)
(omitted category is non–working mom/ working dad)							

Note: All estimates include state fixed effects and are bias–adjusted. The models also include year dummies, and all variables listed in Table 1. The sample has 320 observation for columns 1-5. Some states do not have separate categories for sexual abuse or “other”, and in these cases the neglect measures are missing. There are 316 observations for sexual abuse, and 286 for “other” abuse.

Table 3: Cocaine arrests and child maltreatment, 1990–1996

	ln(physical abuse)		ln(neglect)		ln(sexual abuse)		ln(other)	
	No FE	FE	No FE	FE	No FE	FE	No FE	FE
ln(adult female cocaine possession arrests)	0.289 (2.18)	0.078 (1.01)	0.595 (2.83)	0.114 (0.95)	−0.224 (1.62)	0.006 (0.09)	1.046 (2.72)	0.534 (2.12)
ln(adult male cocaine possession arrests)	−0.187 (1.36)	−0.138 (1.66)	−0.427 (1.95)	−0.210 (1.62)	0.230 (1.57)	0.035 (0.45)	−0.931 (2.34)	−0.528 (2.03)
mean ln(per capita income)	0.319 (0.62)	0.854 (1.49)	0.937 (1.14)	1.307 (1.46)	−1.019 (1.91)	1.180 (2.29)	−2.866 (1.86)	2.600 (1.32)
fraction of children below .75(poverty line)	2.262 (0.96)	3.071 (2.01)	8.226 (2.19)	6.529 (2.73)	−5.525 (2.26)	3.058 (2.22)	0.369 (0.05)	9.365 (1.55)
fraction with a working mom/absent dad	5.295 (2.15)	3.163 (1.77)	12.561 (3.20)	5.826 (2.06)	7.105 (2.67)	1.059 (0.64)	−7.341 (1.06)	10.709 (1.78)
fraction with non–working mom/absent dad	5.232 (2.20)	−1.036 (0.57)	3.102 (0.82)	−7.115 (2.46)	2.320 (0.94)	2.195 (1.39)	2.886 (0.43)	21.210 (3.40)
fraction with working mom/non–working dad	6.286 (2.06)	−0.612 (0.23)	10.294 (2.13)	−2.241 (0.55)	1.997 (0.64)	−1.251 (0.54)	15.204 (1.69)	22.886 (1.79)
fraction non–working mom/non–working dad	8.966 (3.31)	3.982 (1.61)	8.631 (2.01)	4.542 (1.19)	8.454 (2.97)	3.387 (1.41)	−9.128 (1.16)	1.899 (0.21)
fraction with working mom/working dad	1.934 (1.87)	−0.725 (0.68)	5.780 (3.52)	−1.251 (0.75)	0.524 (0.50)	0.624 (0.66)	−0.248 (0.08)	2.137 (0.73)

Notes: The sample has 286 observations for physical abuse and neglect, 282 for sexual abuse, and 255 for “other” abuse. Year effects and all variables in Table 1 regressions are included. Absolute t-statistics in parentheses.

Table 4: Foster care, 1983-1996. Dependent variables is the logarithm of foster care population.

	(1)	(2)	(3)	(4)	(5)
mean ln(per capita income)	-0.043 (0.17)	0.019 (0.07)	-0.028 (0.11)	0.045 (0.16)	-0.253 (0.49)
fraction of children below .75(poverty line)	2.431 (3.15)	2.561 (3.08)	2.400 (3.11)	2.668 (3.05)	2.304 (1.67)
fraction with mother without high school degree	-0.728 (1.73)	-0.869 (1.96)	-0.861 (2.00)	-1.043 (2.25)	-2.606 (2.34)
fraction with a working mom/absent dad	0.094 (0.11)	-0.693 (0.78)	0.109 (0.13)	-0.566 (0.56)	-0.474 (0.36)
fraction with non-working mom/absent dad	-2.890 (3.03)	-3.924 (3.73)	-2.686 (2.77)	-3.970 (3.45)	-3.910 (2.36)
fraction with working mom/non-working dad	0.916 (1.03)	-0.020 (0.02)	0.869 (0.98)	-0.062 (0.06)	1.306 (0.59)
fraction non-working mom/non-working dad	-0.701 (0.87)	-1.065 (1.24)	-0.746 (0.92)	-1.074 (1.26)	1.352 (0.65)
fraction with working mom/working dad	-1.128 (2.33)	-1.559 (2.93)	-1.256 (2.53)	-1.786 (3.14)	-1.434 (1.42)
ln(welfare payment for family of four)			-0.566 (1.75)	-0.589 (1.66)	-1.870 (2.69)
ln(adult female cocaine possession arrests)		-0.015 (0.48)		-0.016 (0.49)	-0.018 (0.26)
ln(adult female cocaine possession arrests)		-0.029 (0.89)		-0.032 (0.96)	-0.010 (0.14)
observations	675	609	675	609	291

Note: Dependent variable is ln(number of children in foster care.) Absolute t-statistics in parentheses. Year and state dummies included in all equations. All other variables listed in Table 1 are included in regressions. The sample for columns (1) to (4) includes years 1983–1996 except 1989. The lower number of observations in columns (2) and (4) is due to missing information on drug arrests. Column (5) is for 1990-1996.

Table 5: Welfare, waivers, family structure, and maltreatment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	father absent/mother works	father absent/mother home	father home/mother works	father home/mother home	father works/mother works	fraction of children < .75(poverty line)	ln(reports) 1977-1996
ln(welfare)	0.136 (0.59)	1.313 (4.30)	-0.325 (0.92)	0.448 (1.20)	-00.258 (1.57)	0.037 (1.68)	0.910 (3.68)
AFDC-UP	0.016 (0.42)	0.147 (2.94)	-0.135 (2.34)	0.069 (1.12)	-0.036 (1.34)	0.014 (3.77)	0.091 (2.25)
any waiver	0.111 (2.22)	0.033 (0.50)	0.078 (1.03)	-0.020 (0.25)	0.059 (1.65)	-0.003 (0.52)	0.110 (2.05)
obs	937	938	938	938	938	938	938
	ln(reports)	ln(victims)	ln(physical)	ln(neglect)	ln(sexual)	ln(other)	ln(foster care)
ln(welfare)	0.334 (1.02)	0.200 (0.30)	1.221 (1.78)	-3.933 (3.88)	1.105 (1.56)	0.423 (0.23)	-1.974 (3.39)
any waiver	0.009 (0.42)	-0.089 (2.04)	-0.088 (1.97)	-0.086 (1.31)	-0.130 (2.88)	-0.132 (1.12)	-0.029 (0.76)
obs	318	318	318	318	314	284	317

Notes: The dependent variables in columns 1-5 of the top panel equal the log of the proportion of children in the type of family listed, minus the log of the proportion of children in the “base” category of father works, mother home. All equations include state and year effects, and controls for ln(population), ln(number of kids), fractions of children in age categories 2-4, 5-13, and 14-17, fraction of children urban, black, and other non-white race, and fraction of children whose mother has no high-school diploma. The variable ln(welfare) is the logarithm of maximum welfare benefits for a family of four. The variable AFDC-UP equals 1 if the state has an AFDC-UP program. The variable “any waiver” equals 1 if the state had any waiver that allowed it to increase work requirements, set time limits to welfare, or change work incentives. The top panel covers the years 1977-1996, except 1989. The bottom panel covers 1990-1996. The variable AFDC-UP is not included in the bottom panel because, by 1990, all states had AFDC-UP programs.

Table A1: Sample means and standard deviations (in parentheses)

	1977-88, 1990-96		1990-1996	
observations (state/years)	941		320	
<i>child maltreatment (from NCCAN):</i>				
reports/1000 children	30.8	(15.4)	42.2	(13.4)
substantiated victims/1000 children			17.6	(11.3)
cases of physical abuse/1000 children			3.8	(2.31)
cases of neglect/1000 children			9.0	(9.09)
cases of sexual abuse/1000 children			2.2	(1.35)
other types of abuse/1000 children			3.0	(3.88)
foster care population/1000 children	5.3	(2.9)	5.9	(3.35)
<i>characteristics of children (from CPS)</i>				
fraction of children with working mother	0.57	(0.09)	0.64	(0.07)
fraction of children with absent father	0.17	(0.06)	0.19	(0.07)
fraction of children with non-working father	0.10	(0.04)	0.10	(0.04)
fraction of children with working mother, absent father	0.10	(0.04)	0.11	(0.04)
fraction of children with non-working mother, absent father	0.07	(0.04)	0.08	(0.04)
fraction of children with working mother, non-working father	0.05	(0.02)	0.05	(0.02)
fraction of children with non-working mother, non-working father	0.05	(0.03)	0.05	(0.03)
fraction of children with working mother and father	0.43	(0.08)	0.48	(0.08)
fraction of children aged 3-4	0.11	(0.01)	0.11	(0.01)
fraction of children aged 5-13	0.49	(0.01)	0.50	(0.01)
fraction of children age 14-17	0.23	(0.02)	0.21	(0.01)
fraction of children urban	0.49	(0.30)	0.51	(0.29)
fraction of children black	0.12	(0.14)	0.13	(0.14)
fraction of children non-white/non-black	0.04	(0.10)	0.05	(0.09)
logarithm of per capita family income	8.56	(0.36)	8.9	(0.19)
fraction of children below 75% of poverty line	0.13	(0.05)	0.13	(0.06)
fraction of children with mother with no high-school diploma	0.18	(0.09)	0.13	(0.06)

Note: The foster care measure is available only for 1982-1988 and 1990-1996. For most states and years, reports are given as the number of families reported for abuse. This was converted to reports per child by assuming 1.6 reported children per reported family (1.6 is the average reported children per reported family in states that provide the information both ways.)