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FROM MALTREATMENT REPORT TO JUVENILE INCARCERATION: THE ROLE OF CHILD WELFARE SERVICES

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ABSTRACT

Objective: This study examined whether children who received child welfare services (e.g., in-home or out-of-home placement) were more or less likely to become incarcerated as serious and violent youthful offenders than those children who were investigated as victims of abuse and neglect but received no further child welfare intervention.

Method: Administrative data on child abuse reporting, foster care, birth records, and juvenile corrections (CYA) were linked to prospectively examine the risk of incarceration as an adolescent following an investigation of abuse or neglect after age 6. The 10 county California sample included 159,549 school-aged children reported for abuse and neglect after 1990.

Results: About 8 per 1,000 children in the sample were later incarcerated in CYA. African American and Hispanic children who received in-home or foster care services after the index investigation event had a lower risk of incarceration than those whose cases were closed after the investigation. Among females, the rate of incarceration was highest for those who experienced foster or group care placements. Children initially reported for neglect were more likely to be incarcerated than those reported for physical or sexual abuse.

Conclusions: Public child welfare services have rarely been assessed in terms of future negative child outcomes. This study finds that one serious negative outcome, CYA involvement, can only be understood when a number of factors are considered. The importance of understanding the differences between how different subpopulations respond to services is highlighted. Specifically, our findings suggest that more attention should be focused on children who are now receiving no services after an investigated child abuse and neglect report, on females, and on victims of child neglect. © 2000 Elsevier Science Ltd.

Key Words—Child maltreatment, Delinquency, Child welfare services.

INTRODUCTION

CHILDHOOD EXPERIENCES OF abuse and neglect have been linked to numerous poor developmental outcomes, including serious and violent juvenile delinquency (Jonson-Reid, 1998). While the exact proportion of children who are maltreated and later commit serious crimes is unknown,

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the prevalence of serious juvenile offending has focused academic, legal, and political attention on the relationship of abuse and neglect to violent and other felony offenses committed by youth across the United States (National Institute of Justice, 1998). Further, the increase in reported and unreported cases of child abuse and neglect over the past few years (Sedlak & Broadhurst, 1966; United States Department of Health and Human Services Children's Bureau, 1998), coupled with decades of research linking maltreatment to delinquency, is cause for concern regarding future trends in serious youthful offending.

The primary prevention of abuse and neglect would clearly be the preferable means of eliminating the risk of delinquency due to maltreatment, but until this goal is achieved, it is important to understand how to successfully intervene in the lives of those children who are already victims. Developing intervention strategies based upon the research on the linkage between maltreatment and delinquency is hampered by methodological problems in prior studies that hinder our understanding of the nature of this relationship (Jonson-Reid, 1998; Schwartz, Rendon, & Hsieh, 1994). Understanding the relative impact of different types of abuse, recurrent abuse, the developmental stage of the child at the time of maltreatment, and differences in etiology according to race and gender are just a few of the missing gaps in the existing research.

As child victims of abuse and neglect include both reported and unreported cases of maltreatment (Sedlak & Broadhurst, 1996), another issue in the prevention of serious or violent delinquency following maltreatment is the identification of a target population. Arguably, because reported cases are easier to access and already have contact with a service system, children with official reports of abuse and neglect are the logical choice for the initial development of services to prevent later delinquency. Here again, however, deficits in our understanding of the outcomes associated with maltreatment hinders our ability to develop such programs. For example, while child welfare services are not focused on delinquency prevention, they may alter the risk associated with the abuse and neglect experiences. Unfortunately, only two studies have considered such intervention as a possible factor in the etiology of delinquent behaviors among children reported for maltreatment (Runyan & Gould, 1985; Widom, 1991). Due to the definitions of delinquency, the time the samples were drawn, and the lack of comparison groups who did not receive services, it remains unclear whether children who have contact with child welfare agencies experience different levels of risk for later serious delinquent behavior according to the level of service provided.

The current study helps fill the aforementioned gaps in research. Children who were reported to child welfare agencies for maltreatment were followed prospectively to examine whether the risk of adolescent incarceration for a serious or violent offense varied according to whether reports were followed by an investigation only, in-home services, or out-of-home placement. Type of maltreatment, recurrence and child demographics were also controlled for in the study. The data were extracted from the California Children's Services Archive.

BACKGROUND: ETIOLOGY OF SERIOUS DELINQUENCY AMONG CHILDREN REPORTED FOR ABUSE AND NEGLECT

The present investigation is limited to children reported to a child welfare agency. Therefore, the following review concentrates on research which also studied children with official reports of abuse or neglect. In addition, because several good reviews of the maltreatment to delinquency research exist (Jonson-Reid, 1998; Schwartz et al., 1994; Widom, 1989), the background literature is limited to studies critical to the discussion of the present investigation.

Maltreatment Type and Recurrence

While past efforts to understand the linkage between child abuse and delinquency often focused on the relationship of violence on later violence (e.g., physical abuse and later violent behavior), recent study results are inconclusive regarding the relative impact of the type of maltreatment. One study compared 633 maltreated juveniles with a randomized school sample ($n = 281$) and a poverty sample ($n = 177$). While confirming the overall relationship of maltreatment to delinquency, they found that physically or sexually abused children were no more likely to commit violent crimes than neglected children when controlling for age, gender, race, and family structure (Zingraff, Leiter, Myers, & Johnsen, 1993). Other studies have found differences by maltreatment type, but debate continues about whether physical abuse (Famularo, Kinscherff, Fenton, & Bolduc, 1990) or neglect (Widom, 1996) is a more powerful risk factor for later serious criminal behavior. It is not known whether the impact of maltreatment type varies according to the type of child welfare intervention received.

There is also some evidence that chronic abuse and multiple abuse types increase the risk of later delinquency. Manly, Cicchetti, and Barnett (1994) found that children with severe and chronic maltreatment histories were more likely to fight at a summer camp for disadvantaged children. Kurtz, Gaudin, Howing, and Wodarski (1993) and Smith and Thornberry (1995) also found that the number of subtypes and the duration (or number of incidents) of abuse increased the level of delinquent behavior.

Child Welfare Services

Only two prior studies examined services provided to children by the child welfare system and later delinquency, finding few differences by service type in the likelihood of delinquent acts (Runyan & Gould, 1985; Widom, 1991). Runyan and Gould (1985) studied a matched sample of school-age children placed into foster care due to abuse ($n = 144$) and abused children served in their homes ($n = 106$). There was no relationship between foster placement and increased risk for delinquency, but children with multiple placements were more likely to have later delinquent records. Widom (1991) also found no effect of foster placement on later delinquency in a sample of children processed through juvenile court for abuse prior to age 11 ($n = 772$). Only 14% of the sample was not placed into foster care. Like the Runyan and Gould (1985) study, Widom found that increased placement moves were more likely to become involved in the juvenile or adult criminal court system. Unfortunately, neither study reported multivariate analyses for delinquent outcomes and lacked comparison groups that did not receive child welfare services. Another problem in interpreting the results of these studies relates to sample selection. Runyan and Gould (1985) studied children placed prior to 1983 (early in the implementation of mandated reporting laws) and Widom (1991) studied children processed through the court prior to 1971 (prior to mandated reporting laws). These samples may be biased toward more severe cases in order to have warranted court intervention at that time.

Child Characteristics

Understanding how maltreatment may increase the likelihood of later delinquent behavior has also been hampered by the scant research addressing the relative impact of child characteristics such as age, gender, and race. An article by Rivera and Widom (1990) indicated that ethnic differences in delinquent behavior following childhood maltreatment remain even when controlling for socioeconomic status. In studying adult criminality, they found that African American males who had been maltreated were at greater risk for adult violent crime; no information was reported about prior child welfare service utilization.

Most previous studies only compare African American and Caucasian groups, due to the

population demographics of the research location (Jonson-Reid, 1998). Little information is available regarding children of other ethnic and racial origins in either the child welfare or juvenile justice systems. No information is available on the transition between these two systems for these groups. This lack of knowledge hampers our understanding of how children of different ethnic and racial backgrounds may or may not benefit from current child welfare system responses to allegations of abuse and neglect.

Researchers are just beginning to understand how the impact of maltreatment on later delinquent behavior varies according to gender and stage of development. Rivera and Widom (1990) found that females were at greater risk for violent offending as juveniles not as adults. This article did not report the impact of services following the abuse or neglect, however, Chamberlain and Reid (1994) reported that following foster care, aggressive behaviors increased among older females but not among males. A recent study of antisocial behavior following maltreatment, indicates that males and females display antisocial behaviors at different times according to the developmental timing of the incident and the type of abuse (Pakiz, Reinherz, & Giaconia, 1997). Wolfe and McGee (1994) noted that boys appear to suffer greater effects of maltreatment when abused at an early age, while girls encountered more negative effects if the abuse occurred in middle childhood. These studies, however, do not help us understand whether or not child welfare responses to abuse and neglect are more or less effective according to a child's gender and age at intervention.

Research Methods

Because many other risk factors have been associated with serious youthful offending, longitudinal community studies are often suggested as a primary means of understanding the interaction of various risk factors over time in the development of delinquency (Earls & Reiss, 1994). Yet abused and neglected children are often not reported (Barth, 1996; Sedlak & Broadhurst, 1996) and, when they are, many of them do not receive any lasting child welfare services (Berrick, Needell, Barth, & Jonson-Reid, 1998; Jonson-Reid & Barth, 1998; United States Department of Health and Human Services Children's Bureau, 1998). In addition, serious youthful offenders are a small proportion of juveniles with delinquent histories. In 1994 only .1% of the juvenile arrests resulted in out-of-home placement—that is, group homes, camps and prisons (Butts, 1996). These youth, however, often commit the most and more serious crimes. Longitudinal community studies have difficulty capturing sufficient numbers of children reported for maltreatment to study both child welfare service use and the rare outcome of juvenile justice system involvement as serious and violent offenders. Studies utilizing administrative data are perhaps the only affordable means of conducting multivariate analysis of these rare subpopulations and critical events.

METHOD

The present study is a prospective analysis of administrative data which follows school-age children in 10 California counties from the time of a first investigated report of abuse or neglect to potential incarceration as an adolescent. The design resembles a longitudinal panel survey in that the same children are studied over time and at specific points, but data are obtained from agency administrative data systems rather than repeated surveys. The index, or first, investigation occurred between 1990 and 1995. The study builds upon prior research by focusing on only the most serious youthful offenders and analyzing the relationship to prior abuse or neglect experiences according to whether a maltreatment report resulted in investigation only, in-home services, or out-of-home placement. Recurrent reports and child demographic characteristics were controlled for in multivariate analyses.

Hypotheses

Prior studies had found no difference in delinquent outcomes by child welfare service history. It was hypothesized, however, that by using a current sample which included an investigated but not served comparison group, multivariate analyses would detect a significant difference in the risk of incarceration according to services provided after a maltreatment report. There was insufficient prior work to suggest a positive or negative direction for this effect. In addition, it was hypothesized that the risk of later incarceration would vary according to maltreatment type and child characteristics.

Data and Variables

Results from analyses of four administrative data bases are included in the present article. These administrative data include California Youth Authority (CYA), Foster Care Information System (FCIS), Social Service Reporting System (SSRS), and the Vital Statistics (birth) records. Because California had not yet implemented a statewide system for the collection of child maltreatment report information, the study was restricted to 10 counties whose child maltreatment report data (SSRS) systems were computerized and compatible.

The 10 study counties include urban, suburban/urban, and rural areas and contain over one-third of California's child population. In 1992, 6 of the 10 counties reported a juvenile violent crime rate of over 500 per 100,000 juveniles (the highest category nationwide); the remaining counties had rates between 300 and 500 per 100,000 juveniles (Snyder & Sickmund, 1995). We compared our sample to the demographic characteristics of children in 1994 national maltreatment report data (United States Department of Health and Human Services, 1996). The study sample had a higher proportion of Hispanic children (30% vs. 9%) and a lower proportion of African American (14% vs. 26%) and Caucasian children (46% vs. 56%).

Data were matched across systems using specialized probabilistic matching software (AUTOMATCH®). Because the true proportion of CYA entries with prior child welfare histories is unknown, the match can only be assessed by examining differences between CYA youth with and without known child welfare histories. Youth wards with child welfare histories were statistically ($p \leq .05$) more likely to enter CYA at a younger age (29% vs. 19%), be female (9% vs. 3%), be incarcerated for a non-violent offense (50% vs. 60%), and report coming from a single parent home (30% vs. 22%). Hispanic CYA wards were less likely to have a history of child welfare involvement while African American and Caucasian youth more frequently had child welfare records.

Dependent variable. Incarceration is limited to commitment to the California Youth Authority (1991 through 1996)—a statewide juvenile corrections system designed to house the most serious youthful offenders (youth in local county juvenile halls, camps, and wilderness programs are not included).

Independent variables. Child maltreatment type will be defined as physical abuse (such as hitting, burning, choking), sexual abuse (such as rape or molestation) or neglect (includes abandonment, insufficient food and shelter, and other forms of deprivation labeled neglect by the county child protective service personnel); reports of emotional abuse and sexual exploitation were not included in this study. Child Welfare Services are defined as in-home services after an investigation, and formal child welfare supervised foster placement in a family or group home setting. Because of the small proportion of children who went on to foster care, in-home and foster care services had to be collapsed in multivariate models. Recurrent reports were defined as investigated maltreatment reports recorded at least 5 days following a prior incident. Child demographics include ethnicity, gender, age at time of abuse report, and age at incarceration. Family demographics included bivariate comparisons of CYA entry by the age of the mother at the time of the subject's birth.

Variable limitations. Administrative data limit analyses to the variables collected as determined by the data management needs of an organization. Of note, is the fact that there was no measure of individual poverty in our data—consistently associated with both maltreatment and delinquency. On the other hand, this concern is less relevant to the study of children who were subjects of child abuse and neglect investigations. A large proportion of children reported for maltreatment, and an even larger proportion of children who receive child welfare services, are poor (Berrick et al., 1998; Drake & Pandey, 1996; Drake & Zuravin, 1998; Jonson-Reid & Barth, 1998). Examination of the census tract conditions of children reported for maltreatment (not shown) revealed that the median level of child poverty in these areas was 34% compared to less than 20% across census tracts within the same cities.

Sample Selection

Study cases included children born between the years of 1974 and 1983 and reported for maltreatment after 1990 in 10 counties. The birth years were selected to coincide within the typical age limits for entry into CYA (11 through 17 years). The limitation of maltreated children who were reported at age 7 or older was necessary due the availability of data. While it is impossible to know how many of these children had prior histories of maltreatment reports, over half of the abuse reports in California are made on older children (Needell, Webster, Barth, & Armijo, 1997). It seems reasonable that a large proportion of these children are coming to the attention of child welfare at an older age. Further prior research has found that the vast majority of subsequent reports occur within 2 years of an initial report (DePanflis, 1995). Only 7- and 8-year-old children in our sample (less than 20% of the overall sample) lack such a 2-year period prior to the study's index investigation.

The study was restricted to children who received at least a child protective services investigation following a maltreatment report. Children with missing birthdates or ethnicity (about 1.5%) were dropped from the sample. Selecting cases based upon the above birth years resulted in a total of 159,549 children with investigated child maltreatment reports from the 10 counties. Twenty-three percent of the sample received some type of service beyond an investigation; most received in-home services, but about 6% of the children served went on to foster care. A total of 1,211 youth with at least one investigated abuse or neglect report had later record of entry into CYA. A comparison group of CYA entries without child welfare histories was constructed using the city and county of residence code in the CYA data. A total of 6,334 youth were identified as living in the 10 study counties prior to entry into CYA; there were 5,123 incarcerated youth without child welfare histories.

Analyses

Data were analyzed using SAS version 6.11 (UNIX version). Bivariate descriptive analyses were performed for each sample group. Because of the range of codes and county practices related to "Other" report reasons (emotional maltreatment, exploitation, unknown, etc.), children reported for any other reason but physical abuse, sexual abuse or neglect were dropped from the analyses. Risk of entry into CYA in the 10 county sample was analyzed using Cox Proportional Hazards models in order to adjust for the time period a given child was at risk following a child abuse report investigation (Allison, 1995). To satisfy the regression assumption of independence, one child per family was randomly selected for analysis. Due to the small numbers of children from "Other" ethnic origins (Asian, American Indian, etc.) and the heterogenous nature of this group, these cases were omitted from multivariate models. Dummy variables (0,1) were constructed for the independent variables. Time-varying variables were created for those factors whose impact changed

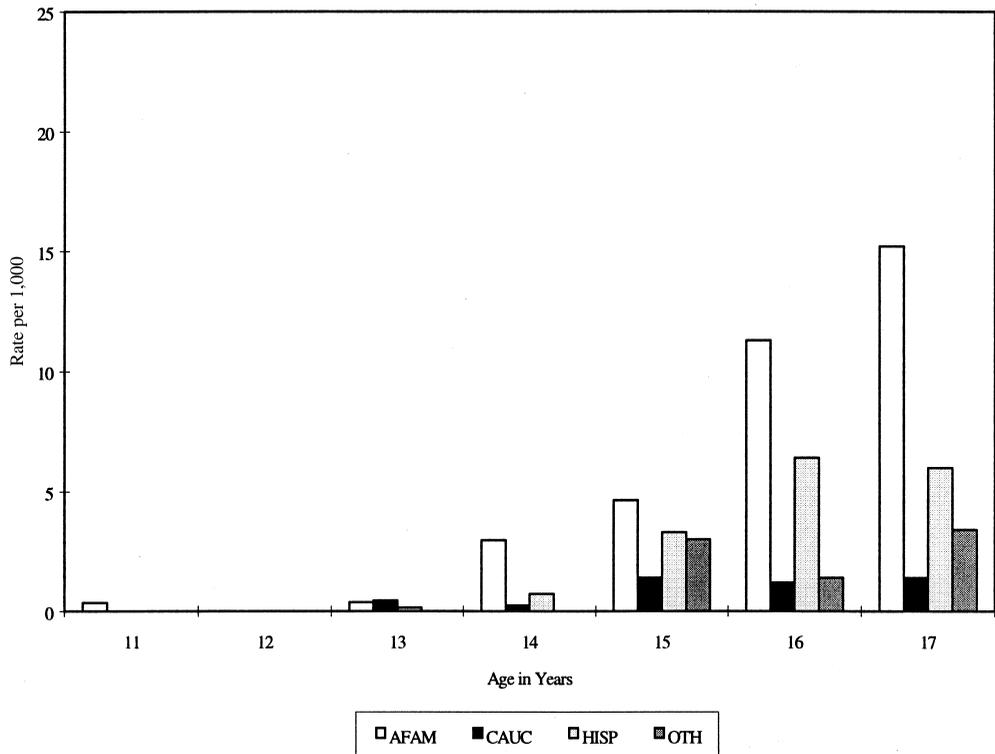


Figure 1. Rate of CYA entries in 1994 per 1,000 youth investigated for maltreatment: Age by ethnicity.

according to the time at risk. Plots of the $-\log$ (estimated survival function) against \log (failure time) were inspected for other variables and it was determined that they all reasonably satisfied the necessary assumption of proportional hazard rates over time (Allison, 1995). Similar to the interpretation of an odds ratio in logistic regression, a risk ratio more than one indicates an increased risk and a risk ratio under one indicates a decreased risk. Interaction terms indicate that the influence of a single variable changes according to the presence or absence of another variable.

RESULTS

A total of 1,211 children or 8 children per 1,000 children with investigated reports entered the California Youth Authority in the 10 sample counties. The rate of entry into CYA was at least two times higher for children with investigated abuse reports than for all children in the state (based upon 1994 child population counts from the California Department of Finance). The median time to entry into CYA following the first recorded investigation in our data was approximately 31 months.

Ethnicity and Gender

Among children investigated for maltreatment, African American children had the highest rate of CYA entry, followed by Hispanic children (see Figure 1). Figure 2 shows that while African American children have the highest rate of entry into CYA, their rate of entry declines following

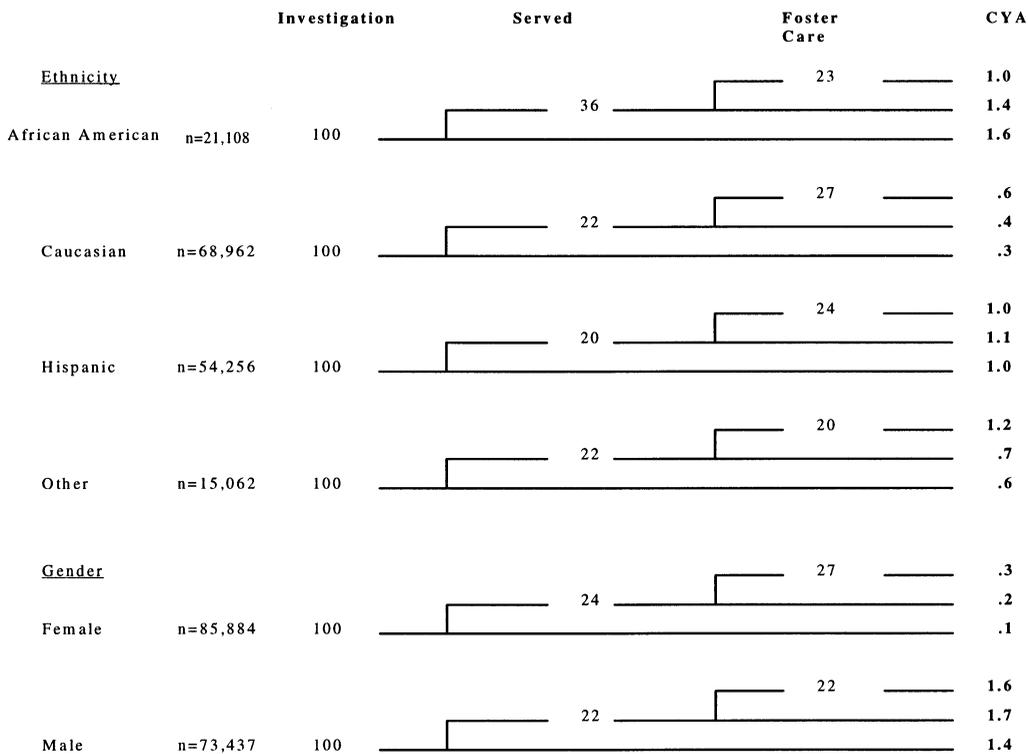


Figure 2. Investigation to CYA entry: Percentage of prior case decision by ethnicity and gender.

in-home or foster care placement. Among Hispanic children there is no significant difference in rate of entry according to whether or not they received ongoing services. Caucasian children and children of Other ethnic groups have higher rates of CYA entry following foster care (Figure 2).

Having an investigated maltreatment report had a substantial impact on the risk of incarceration for females though the overall proportion of females in CYA is only 4%. The proportion of females entering CYA with child welfare histories was almost three times higher (.2 per 1,000) than that from the general county wide population of females of that age range (.07 per 1,000) as compared to the proportion of males entering CYA with child welfare histories—two times higher (2.9 per 1,000) than that of the general male population (1.4 per 1,000). In addition, the rate of entry to CYA for females increased with each increase in service level (investigation, non-foster care services, foster care), while the rate of entry for males was similar or increased only slightly among the various levels of child welfare services (Figure 2).

Maltreatment Type and Age

Children initially reported for neglect—particularly those cases which move beyond investigation are more likely to enter CYA than children reported for with physical abuse or sexual abuse (see Figure 3). Children between the ages of 7 and 11 years were more frequently served and placed into foster care, but had the lowest rate of entry into CYA. Children reported between the ages of 12 and 14 and provided services beyond an investigation had higher rates of entry into CYA (see Figure 3).

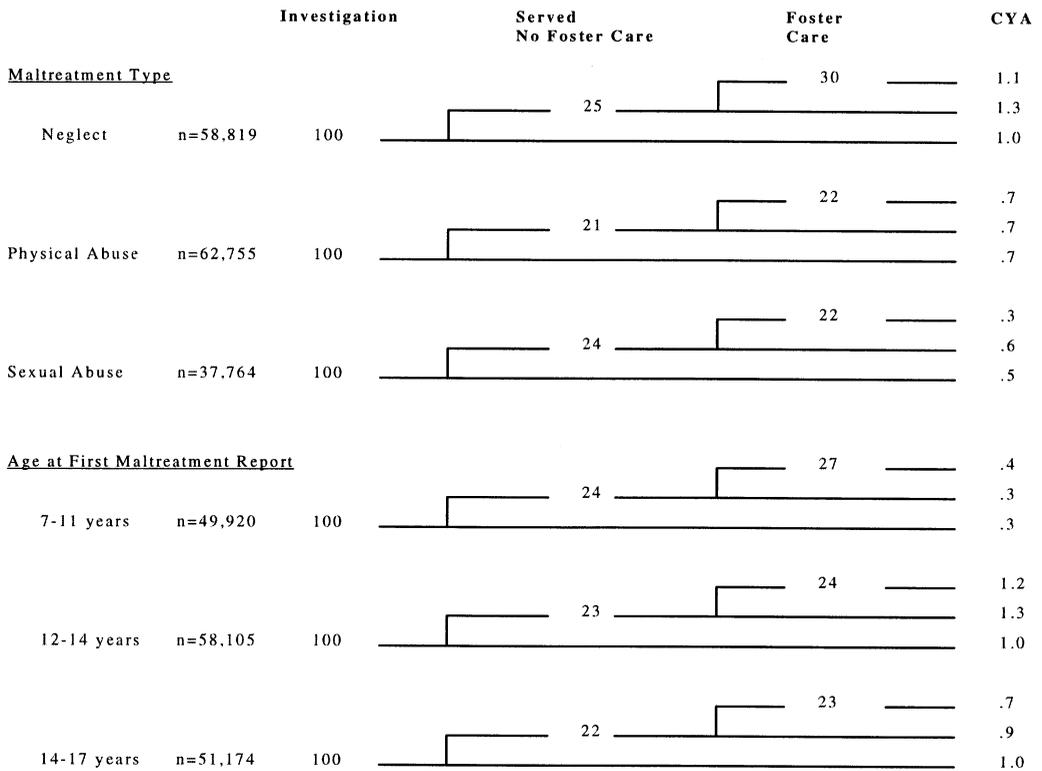


Figure 3. Investigation to CYA entry: Percentage of prior case decision by maltreatment type and age.

Age of Mother

The poor match rate between birth records and incarceration records (50% of cases) limits the investigation of the impact of the mother’s age to simple descriptive report of matched cases compared to all children born in the same years in the study counties. Slightly more than 7% of all children in the 10 county region born from 1974 to 1983 were born to adolescent mothers. About 10% of the study children that did not enter CYA were born to mothers under age 18; 21% of those with investigated reports of abuse or neglect who later entered CYA were born to teen mothers.

Recurrent Reports

Table 1 illustrates case characteristics among CYA entries according to the number of prior abuse reports recorded. Youth who entered CYA following contact with child welfare agencies were very likely to have had multiple reports of maltreatment. Forty-one percent of the study sample that entered CYA had at least three reports, compared to only 28% of the study sample that did not enter CYA. Among youth who entered CYA following contact with the child welfare system, 35% entered after their first report; 42% had between two and four reports, and 23% entered following five or more reports. Sixty-two percent of the youth who entered CYA after three reports of abuse or neglect were reported for more than one type of maltreatment.

Risk of CYA Entry

To examine the risk of entry into CYA for children with an investigated abuse or neglect report while controlling for the time at risk, a proportional hazards analysis was conducted (n = 61,705).

Table 1. CYA Entries by Number of Prior Reports: Up to Three Reports

	1 Report	2 Reports	3 Reports
Types of Abuse			
Neglect	50.0	52.2	46.0
Physical abuse	34.3	35.7	27.0
Sexual abuse	15.2	12.1	27.0
Same type	n/a	49.3	37.8
Age at Entry			
<14 yrs	2.2	1.5	4.6
14–18 yrs	97.8	98.5	95.4
Age at Report			
7–11 yrs	10.0	20.1	32.2
12–15 yrs	49.6	55.8	51.3
15–17 yrs	40.4	24.1	16.4
Ethnicity			
AFAM	30.0	25.9	36.3
CAUC	16.4	19.0	20.4
HISP	43.1	47.1	45.4
OTH	10.5	8.0	7.9
Total*	408	274	152

* An additional 387 youth entered CYA after four or more reports.

The final model had a -2 Log Likelihood Chi-square of 879.42, 17 *DF* ($p = .0001$), which indicated that the variables were important in describing the risk of incarceration controlling for the age at maltreatment report and the time between the first report and later incarceration. The variance explained by the variables was quite low (below 5%) according to Allison's (1995) formula to estimate this for proportional hazards analysis: $R^2 = 1 - \exp[-L/N]$. This was not surprising, however, given the limited variables available. Further, the primary purpose of the model was describing the relative risk of incarceration among those children receiving ongoing child welfare services and those not receiving ongoing services following an investigated abuse and neglect report.

Age at first report (children 14 or older) and being male were the strongest contributors to incarceration in the present analysis. Hispanic children investigated for abuse prior to age 14 had a slightly higher risk of incarceration than African American or Caucasian children. A change in report type on a second report of maltreatment resulted in a greater likelihood of incarceration—particularly when the first report was for reasons of neglect. Having more than three reports did not significantly impact risk of incarceration when controlling for maltreatment type, services and child characteristics. The provision of child welfare services, including in-home and foster placement, did not change the risk of incarceration for Caucasian children, but among African American or Hispanic children receipt of services beyond investigation significantly decreased the risk of entry into CYA (see Table 2).

DISCUSSION

In the 10 counties, youth with investigated child abuse reports comprised about 19% of the entries into CYA. While smaller than prior estimates of juvenile offending among maltreated youth (e.g., Widom, 1989), this study did not include unreported maltreatment and was limited to children with investigated cases of abuse and neglect after age 6—about 70% of child maltreatment reports on school-age children are investigated in California. Further, CYA facilities are reserved for the

Table 2. Proportional Hazards Model: Risk of Incarceration. $n = 61,705$, 542 Incarcerated (1 Child Per Family Born 1974–1981)

Variable	Analysis of Maximum Likelihood Estimates					
	DF	Parameter Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square	Risk Ratio
Age at 1st Report						
14 or older	1	.85	.18	21.66	.0001	2.35
Ethnicity						
African American	1	.69	.43	2.65	.10	2.00
Hispanic	1	.89	.37	5.78	.02	2.45
Caucasian						
Gender						
Male	1	2.20	.27	67.40	.0001	9.07
Female						
Report Type						
Neglect	1	.26	.09	8.95	.003	1.30
Physical/Sexual						
Change in Report Type (Change)						
Yes	1	.33	.14	5.64	.02	1.40
No						
Number of Reports (Num.)						
3+ reports	1	-.10	.28	0.13	.72	.91
<3 reports						
Child Welfare Services (CWS)						
Foster/Other	1	-.04	.33	.02	.91	.96
Investigation only						
Interactions						
Male/AFAM	1	.62	.40	2.39	.12	1.86
Male/HISP	1	.58	.36	2.62	.11	1.78
Age/AFAM	1	.62	.24	6.41	.01	1.85
Age/HISP	1	-.11	.22	0.24	.62	0.89
CWS/AFAM	1	-.65	.25	6.67	.009	.52
CWS/HISP	1	-.55	.25	4.99	.03	.58
Change/Num.	1	-.20	.19	1.11	.29	.82
Time Varying						
Hispanic	1	.01	.01	3.46	.06	1.01
Number	1	.01	.01	2.51	.11	1.01

-2 Log Likelihood χ^2 879.42, 17, df , $p = .0001$.

most serious and chronic of juvenile offenders—a tiny proportion of the population of juvenile offenders who are arrested (the most common criteria of juvenile offending used in studies of this kind).

Taken as a whole, this study found that children and youth reported for maltreatment who received services beyond the investigation (including foster care) were not significantly more likely to become incarcerated than those children whose cases were investigated but never opened for service. On the surface, this suggests that despite a gap of almost 20 years and at least five major policy initiatives, our findings remain similar to those of Widom (1991) and Runyan and Gould (1985). By using multivariate analyses to look beyond the overall relationship, however, our analyses confirmed the initial hypothesis that there are significant variations in the likelihood of later incarceration according to service levels, controlling for multiple reports, type of abuse and child characteristics.

Ethnicity

The rate of entry into CYA among children with investigated abuse reports compared to children in the general population doubles for African American, Caucasian, and Hispanic children. This is

consistent with the repeated association of higher risk of delinquent behavior among children who have been maltreated (Jonson-Reid, 1998; Widom, 1989). The higher levels of incarceration for African American and Hispanic youth are also consistent with other studies which indicate that youth of color face an increased chance of higher penalties (e.g., incarceration) after official contact with the juvenile justice system (Pope & Feyerherm, 1992; Walker, Spohn, & DeLone, 1996). This overall increased risk changes, however, according to the levels of child welfare services received. Receiving in-home or foster care services lowered the risk of incarceration for African American and Hispanic children, but not for Caucasian children. This finding was similar to a study of child welfare exits in Arizona, which found that while African American children in foster care had worse child welfare system outcomes (such as length of stay in foster care) they were less likely to experience negative developmental outcomes like transfer to juvenile corrections (McMurtry & Lie, 1992).

Gender

Although males were at higher risk for entry into CYA, the change in risk for females as the intensity of services increased was quite dramatic. The small number of females in the incarcerated sample made it impossible to further explore whether there was an interaction with other variables in the multivariate model. This limitation, along with the scant research on delinquent females, complicates interpretation of the findings. Some previous work indicates that timing (in terms of age) of abuse experiences has a differing impact for females versus males. Females have been shown to be at greater risk of antisocial behavior following maltreatment (particularly sexual abuse) in preadolescence (Pakiz et al., 1997). Therefore, some of the increased risk for females in this sample may be attributed to the fact that most of the females were in the preadolescent or adolescent stages when the index investigation occurred. Another possible explanation for gender differences might be that the type of abuse impacted the outcome. For example, if one type of abuse was more strongly associated with serious offending and also associated with a particular gender than the gender differences might be partially attributed to maltreatment type—this alternative was not supported by our data. It is also possible that females display fewer external behaviors that would draw attention to them (Wolfe & McGee, 1994), meaning that they may experience longer undetected periods of exposure to abuse or neglect. Other studies have found worse developmental outcomes for both severe and chronic maltreatment populations (Cicchetti, 1996), therefore it may be the chronicity of the maltreatment which increases the likelihood of incarceration among females.

Neglect

Though the majority of maltreatment reports made involve neglect, there has been an insufficient amount of research attention to this issue (Crouch & Milner, 1993). Part of this lack of research may be attributed to the idea that physical or sexual abuse experiences are more immediately damaging than neglect (which includes caretaker incapacity in this study). Contrary to hypotheses regarding the relationship between physical and sexual abuse and later delinquency (Jonson-Reid, 1998), neglect increased the risk of incarceration in this study. This is similar to Widom's (1996) finding in a follow-up study of her initial sample in which neglect was more predictive of later violent offending than abuse. There are several potential explanations for this finding. First, examination of children with multiple reports indicated that over 30% of the sample was reported for more than one type of maltreatment over the course of 6 years. Second, child welfare workers are forced to choose a "dominant" report reason for entry into the administrative data base. It may be that those children experiencing neglect were also experiencing other forms of maltreatment. Even if neglect was the only officially documented form of maltreatment for those entering CYA, there may be unreported emotional or psychological abuse. Some studies have indicated that the

combination of psychological maltreatment with other forms of abuse increase the risk of developmental damage (Crittendon, Claussen, & Sugarman, 1994). This finding, however, may also truly reflect the fact that neglect is an equally damaging form of maltreatment. For example, other studies indicate that chronically neglected children move from more passive reactions to aggressive behavior in later childhood (Crouch & Milner, 1993). Neglected children may also experience greater deficits in areas which have the potential to mitigate some of the negative outcomes of maltreatment—for example, school performance (Gerstein & Briggs, 1993; Werner, 1993). The impact of neglect may also be related to the level of restorative or supportive services provided to this group of maltreated children and youth as compared to those who are physically or sexually abused. One study of children and youth in foster care found that children removed from their homes due to sexual or physical abuse were much more likely to receive mental health services than children removed due to neglect (Garland, Landsverk, Hough, & Ellis-MacLeod, 1996). Such a pattern of service provision might diminish later criminal behaviors.

Services

The analyses of risk of entry into CYA following child welfare intervention provides a mixed picture of the impact of the child welfare system in the 10 study counties. Many youth who eventually entered CYA in the present study appear to be a sub-population which consistently falls beneath the threshold of being served yet may be experiencing significant family dysfunction and some level of maltreatment. Chronic maltreatment report patterns and certain interactions between recurrent reports and abuse types increased a child's risk of incarceration. Under guidelines which support intervention only in cases where the immediate threat to life or safety is compromised, many older youth experiencing less severe forms of maltreatment may repeatedly come to the attention of mandated reporters but never receive substantial services.

Among those children and youth of color who are served beyond an investigation, the findings appear more positive. Given the increased risk among maltreated children for later delinquency (Jonson-Reid, 1998) and that children in foster placement had families with more cumulative problems (Zuravin & DePanflis, 1995), one might expect a higher overall rate of CYA involvement among youth receiving services and/or foster care. Instead, there were no significant differences in risk of incarceration among Caucasians whose cases were investigated only, served, or placed into foster care and a decreased risk for African American and Hispanic children who received services beyond an investigation. As aforementioned at least one other study has found that African American children in foster care were less likely to experience poor long-term outcomes like transition to juvenile corrections (McMurtry & Lie, 1992). While most of the children in the served sample received in-home rather than foster care interventions, the dynamics may be similar. One explanation for such an underlying dynamic may be the cumulative impact of family and community poverty. Children of color who are reported for maltreatment are highly likely to come from impoverished families and neighborhoods with fewer educational, health and social resources to promote healthy development. Even minimal services (e.g., short-term in-home intervention) may be providing a "lifeline" for more positive future outcomes among these children.

Limitations

There are many strengths in using administrative data analysis including the ability to study events over time with a large, diverse sample; the enhanced ability to detect bivariate and multivariate patterns due to the sample size; and the ability to use a contemporary sample that does not rely on retrospective recall of events. Still, there are limitations to the reliance on available administrative data. The lack of lifetime coverage of child welfare contacts limits our understanding of recurrent reports and service events. It also creates a probable underestimate of the proportion of CYA entries with investigated child abuse reports. An additional undetected pro-

portion of this study's CYA population may have had contact with child welfare agencies as very young children without subsequent reports following age 7. This may partially account for the smaller amount of variance explained by the model of risk of entry. The study does, however, accurately describe the prospective experiences of children experiencing reports after age 6. Further, data entry screens often force certain choices rather than allowing workers to enter detailed information (e.g., only one type of maltreatment was recorded for each report). Although we could not measure concurrent maltreatment types, our findings regarding maltreatment type were consistent with prior work (Widom, 1996). Despite these limitations discussed here and in the methods section, several implications for future research and practice are raised by the descriptive findings.

Implications

African American children in this study have the highest rate of involvement in the child welfare and CYA systems. Our study indicates that Hispanic children, however, have a similarly high risk for negative developmental outcomes following child welfare intervention. There is little research on service receipt or developmental outcomes for children not of African American or Caucasian origins. Future research needs to focus efforts on understanding the service trajectories and outcomes for understudied populations such as Hispanic children in comparison to children of other ethnic groups so that policy and practice may be responsive to these children and families.

The association between child welfare involvement and subsequent CYA involvement is stronger for females than for males. In addition, as females who had opened cases or who were placed were at proportionately much higher risk of future CYA involvement. We believe that despite the fact that females remain at lower risk overall than males, the stronger association between service level and subsequent delinquency merits further research. As the proportion of females in the juvenile justice system continues to increase understanding the relationships between gender, type of maltreatment, child welfare involvement, and subsequent delinquency is critical to our ability to deliver efficient services.

While there may be a tendency to consider physical or sexual abuse to be more severe forms of maltreatment, neglect needs to be considered as an equally significant risk factor for later developmental outcomes like serious juvenile crime. Research, program evaluation, and policy should focus on the outcomes and development of children from neglecting environments, highlighting what practices are most effective with what population and at what age.

Understanding the true benefit of services is severely hampered by deficits in outcome research. Our data indicate that children of color who are reported for maltreatment may be experiencing a protective effect from in-home or foster care services, controlling for those children who have multiple reports. The finding is so compelling that future research should be designed to understand more about this subpopulation of children experiencing positive outcomes. Replication of this finding may support increasing expenditures in child welfare services to offset later costs and harms due to poor developmental outcomes like adolescent incarceration. There is substantial evidence that child welfare services protect abused and neglected children (Barth, 1996), but our findings offer hope that child welfare services also protect the community from victimization.

The findings of heightened risk of incarceration for children with investigated abuse and neglect reports must also be placed in the context of other contributing factors. Abused and neglected children often face more than one level of risk (e.g., abuse, teen mother households, poverty) and are frequently involved in more than one public service agency (e.g., child welfare, public schools, juvenile justice, etc.). It is unlikely that any single service system can effectively serve families in trouble who are also living in troubled communities and funding sources are currently very supportive of collaborative and multi-system efforts. Large scale examinations of service trends and outcomes (like the present study) can help identify areas for further research, target programs, and potentially assign costs to a child's trajectory through public service systems. Efforts to include

outcomes like incarceration in such analyses is critical to a true cost accounting of the value of child welfare services. More research is needed to understand how abused and neglected children move through various public systems and the type, duration, and intensity of services provided. Based upon such information, demonstration projects can be designed to maximize the use of the child welfare services infrastructure in concert with other agency services to increase our ability to prevent negative outcomes like incarceration.

CONCLUSION

This study found evidence supporting associations between child maltreatment type, race, gender, and provision of child welfare services with subsequent entry into CYA. The inclusion of services data in research addressing linkages between maltreatment and serious delinquency is relatively new and promises findings which will be of more direct utility to the public child welfare system. As computerized databases become more prevalent, we hope that variations and replications of our work and that of others will build a coherent and useful body of knowledge. Developing this understanding of the protective effects of child welfare services should be a top priority of collaborative juvenile justice and child welfare efforts.

While maltreatment does appear to increase the risk for later serious youthful offending, this study indicates that child welfare services may mitigate some of this risk—particularly among abused and neglected children of color. Further, these findings suggest that there are changes that can be made within the existing system that should have a positive impact on reducing later adolescent incarceration. Concentrating efforts to reduce recidivism and increasing efforts to serve a higher proportion of children reported for maltreatment are two examples of such changes. Yet, the child welfare system, is by design focused on child protection and cannot provide all the service and support necessary to allow victims of abuse and neglect the opportunity to develop into successful adults. Collaboration among agencies and programs will be necessary to maximize our ability to prevent outcomes like adolescent incarceration. It is hoped that these findings will promote discussion among policy makers and practitioners regarding how best to build upon or change existing child welfare intervention approaches to help maltreated children and youth transition to healthy and productive lives.

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REFERENCES

- Allison, P. (1995). *Survival analysis using the SAS system. A practical guide*. Cary, NC: SAS Institute, Inc.
- Barth, R. (1996). The juvenile court and dependency cases. *The Future of Children: The Juvenile Court*, *6*, 100–110.
- Berrick, J., Needell, B., Barth, R., & Jonson-Reid, M. (1998). *The tender years: Toward developmentally-sensitive child welfare services for very young children*. New York: Oxford University Press.
- Butts, J. (1996). *Offenders in juvenile court, 1994*. Washington, DC: Office of Juvenile Justice and Delinquency Prevention.
- Chamberlain, P., & Reid, J. (1994). Differences in risk factors and adjustment for male and female delinquents in treatment foster care. *Journal of Child and Family Studies*, *3*, 23–39.
- Cicchetti, D. (1996). Child maltreatment: Implications for developmental theory and research. *Human Development*, *39*, 18–39.
- Crittendon, P., Claussen, A., & Sugarman, D. (1994). Physical and psychological maltreatment in middle childhood and adolescence. *Development and Psychopathology*, *6*, 145–164.
- Crouch, J., & Milner, J. (1993). Effects of child neglect on children. *Criminal Justice and Behavior*, *20*, 49–65.
- DePanflis, D. (1995). *The epidemiology of child maltreatment recurrences*. Baltimore, MD: University of Maryland.
- Drake, B., & Pandey, S. (1996). Understanding the relationship between neighborhood poverty and specific types of maltreatment. *Child Abuse & Neglect*, *20*, 1003–1018.

- Drake, B., & Zuravin, S. (1998). Bias in child maltreatment reporting: Revisiting the myths of classlessness. *American Journal of Orthopsychiatry*, **68**, 295–305.
- Earls, F., & Reiss, A. (1994). *Breaking the cycle: Predicting and preventing crime*. Washington, DC: National Institute of Justice.
- Famularo, R., Kinscherff, R., Fenton, T., & Bolduc, S. (1990). Child maltreatment histories among runaway and delinquent children. *Clinical Pediatrics*, **29**, 713–718.
- Garland, A., Landsverk, J., Hough, R., & Ellis-MacLeod, E. (1996). Type of maltreatment as a predictor of mental health services use for children in foster care. *Child Abuse & Neglect*, **20**, 675–688.
- Gerstein, L. H., & Briggs, J. R. (1993). Psychological and sociological discriminants of violent and nonviolent serious juvenile offenders. *Journal of Addictions and Offender Counseling*, **14**, 2–14.
- Jonson-Reid, M. (1998). Youth violence and exposure to violence in childhood: An ecological review. *Aggression and Violent Behavior*, **3**, 159–179.
- Jonson-Reid, M., & Barth, R. (1998). *Pathways from child welfare to juvenile incarceration for serious and violent offenses*. Final report to the Office of Juvenile Justice and Delinquency Prevention (Grant #96-JN-FX-0008). Berkeley, CA: University of California at Berkeley, School of Social Welfare, Child Welfare Research Center.
- Kurtz, P., Gaudin, J., Hoving, P., & Wodarski, J. (1993). The consequences of physical abuse and neglect on the school-age child: Mediating factors. *Children and Youth Services Review*, **15**, 85–104.
- Manly, J., Cicchetti, D., & Barnett, D. (1994). The impact of subtype, frequency, chronicity, and severity of child maltreatment on social competence and behavior problems. *Development and Psychopathology*, **6**, 121–143.
- McMurtry, S., & Lie, G. (1992). Differential exit rates of minority children in foster care. *Social Work Research & Abstracts*, **28**, 42–48.
- National Institute of Justice. (1998). *Understanding the Nexus. Investigator initiated research (Request for proposals)*. Washington, DC: Author.
- Needell, B., Webster, D., Barth, R., & Armijo, M. (1997). *Performance indicators for child welfare services in California*. Berkeley, CA: University of California.
- Pakiz, B., Reinherz, H. Z., & Giaconia, R. M. (1997). Early risk factors for serious antisocial behavior at age 21: A longitudinal community study. *American Journal of Orthopsychiatry*, **67**, 92–101.
- Pope, C., & Feyerherm, W. (1992). *Minorities and the juvenile justice system*. Washington, DC: Office of Juvenile Justice and Delinquency Prevention.
- Rivera, B., & Widom, C. (1990). Childhood victimization and violent offending. *Violence and Victims*, **5**, 19–34.
- Runyan, D., & Gould, C. (1985). Foster care for child maltreatment: Impact on delinquent behavior. *Pediatrics*, **75**, 562–568.
- Schwartz, I., Rendon, J., & Hsieh, C. (1994). Is child maltreatment a leading cause of delinquency? *Child Welfare*, **73**, 639–655.
- Sedlak, A., & Broadhurst, D. (1996). *Third National Incidence Study of Child Abuse and Neglect*. Washington, DC: US Department of Health and Human Services.
- Smith, C., & Thornberry, T. (1995). The relationship between childhood maltreatment and adolescent involvement in delinquency. *Criminology*, **33**, 451–481.
- Snyder, H., Sickmund, M., & Poe-Yamagata, E. (1996). *Juvenile offenders and victims: 1996 update on violence*. Washington, DC: Office of Juvenile Justice and Delinquency Prevention.
- United States Department of Health and Human Services Children's Bureau. (1998). *Child maltreatment 1996: Reports from the states to the National Center on Child Abuse and Neglect*. Washington, DC: US Government Printing Office.
- Walker, S., Spohn, C., & DeLone, M. (1996). *The color of justice. Race, ethnicity and crime in America*. San Francisco, CA: Wadsworth Publishing Company.
- Werner, E. (1993). Risk, resilience, and recovery: Perspectives from the Kauai longitudinal study. *Development and Psychopathology*, **5**, 503–515.
- Widom, C. (1989). Child abuse, neglect, and adult behavior: Research design and findings on criminality, violence, and child abuse. *American Journal of Orthopsychiatry*, **59**, 355–367.
- Widom, C. (1991). The role of placement experiences in mediating the criminal consequences of early childhood. *American Journal of Orthopsychiatry*, **61**, 195–209.
- Widom, C. (1996). *An update on the cycle of violence*. Washington, DC: National Institute of Justice.
- Wolfe, D., & McGee, R. (1994). Dimensions of child maltreatment and their relationship to adolescent adjustment. *Development and Psychopathology*, **6**, 165–181.
- Zingraff, M., Leiter, J., Myers, K., & Johnsen, M. (1993). Child maltreatment and youthful problem behavior. *Criminology*, **31**, 173–202.
- Zuravin, S., & DePanflis, D. (1995). *Factors affecting foster care placement of children receiving child protective services*. Presented at the Third National Colloquium of the American Professional Society on the Abuse of Children, Tucson, AZ.