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## Does Child Maltreatment Predict Adult Crime? Reexamining the Question in a Prospective Study of Gender Differences, Education, and Marital Status

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### Abstract

Bivariate analyses of adult crime and child maltreatment showed that individuals who had been maltreated as children, according to child welfare reports, subsequently committed more crime than others who had not been maltreated. Analyses of crimes by category—property, person, and society—provided further evidence of a link between child maltreatment and crime at the bivariate level. Tests of gender differences showed that crime generally is more prevalent among males, although females with a history of maltreatment were more likely than those in a no-maltreatment (comparison) group to report having had some prior involvement in crime. Surprisingly, multivariate analyses controlling for childhood socioeconomic status, gender, minority racial status, marital status, and education level showed that, with one exception (crimes against society), the significant association between child maltreatment and crime observed in bivariate tests was not maintained. Implications for future research are discussed.

### Keywords

child maltreatment; crime; gender; SES

### Introduction

It has long been understood, or at least assumed, that child maltreatment is a risk factor for antisocial behavior and crime among adolescents and adults (Maxfield & Widom, 1996; Widom & Maxfield, 2001). A number of studies have been published on the topic. For

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example, a study by Widom and Maxfield (2001) of more than 900 individuals with officially recorded histories of child maltreatment found that, relative to those of a comparison group, previously maltreated individuals were at higher risk for violent crime as juveniles and as adults, and for being arrested at least once by the time they reached adulthood. Frequency of arrests was also higher for those who had been maltreated at some point earlier. In another study of more than 1,400 participants followed from kindergarten to adulthood, Topitzes, Mersky, and Reynolds (2011) found that child abuse and neglect, based on official records, predicted violent crime convictions in adulthood for both males and females. However, maltreatment was associated with adult violent crime arrest only for females in that study. Elsewhere, Smith and Thornberry (1995) found that official child maltreatment was associated with moderate and more serious forms of self-reported adolescent crime. English, Widom, and Brandford (2002) found higher rates of criminal arrests at age 24 for participants of their study who had been previously abused or neglected.

Although these and other studies do in fact provide evidence of a link between maltreatment and crime, methodological weaknesses in these and other studies limit the extent to which definitive conclusions can at this point be drawn (English et al., 2002). In fact, some have argued that research on the consequences of child maltreatment generally has failed to meet a basic threshold of methodological rigor, in part because there is too heavy a reliance on cross-sectional data and retrospective measures of child maltreatment (English et al., 2002; Thornberry, Knight, & Lovegrove, 2012). A related concern is that too many studies rely exclusively on official record measures of crime (e.g., arrests and court dispositions) which may underestimate crime involvement (English et al., 2002; Widom, Raphael, & Dumont, 2004). Yet another problem with some studies on these topics is that far too little attention has been paid to correlated risk factors (English et al., 2002), which, when not attended to in analyses, can lead to inaccurate estimates and faulty conclusions about child maltreatment effects on adult crime. Even as researchers move to strengthen the designs of their studies by analyzing risk factors comprehensively and by investigating predictors and outcomes longitudinally, knowledge of whether and how child maltreatment serves to catalyze crime involvement remains incomplete (T. I. Herrenkohl, 2011a; Thornberry et al., 2012). In that child abuse and neglect are themselves risk factors that are correlated with other forms of adversity, including poverty and low socioeconomic status (SES; T. I. Herrenkohl & Herrenkohl, 2007), it is important to account for this covariation when analyzing crime as an outcome. Few studies have systematically accounted for socioeconomic differences that can be hidden from view when child maltreatment is examined as a stand-alone predictor (Maxfield & Widom, 1996).

A study by Smith, Ireland, and Thornberry (2005) on young adult crime in a cohort study of about 1,000 males showed that, after accounting for SES factors that include individual's level of education and poverty, officially recorded (substantiated) reports of abuse and neglect did, in fact, predict later arrests and self-reported general and violent offending. Odds ratios (ORs) for these outcomes were around 2, indicating a doubling of the risk for later crime associated with a youth's having been maltreated, after controlling for SES. Their study suggests that child maltreatment effects may persist when SES is taken into account, although it is noteworthy that this particular study focused on maltreatment in adolescence, not in childhood, which has more often been the focus of other studies on the topic.

In the current investigation, we revisit the question of whether child maltreatment predicts adult crime, but we do so using data from an extended longitudinal study that began when participants were children. We investigate child maltreatment in bivariate and in multivariate models to account for SES and other covariates. We examine bivariate associations between child maltreatment and crime for our full analysis sample and for males and females of the sample separately so as to examine possible gender differences (Howell, 2003; Johansson & Kempf-Leonard, 2009; Topitzes et al., 2011). Although some research has investigated subtype differences in child maltreatment (e.g., physical abuse vs. neglect) and its effects on crime, we analyze abuse and neglect together as a single construct because the findings of several studies similar to ours point to subtype effects of a very similar magnitude when crime serves as an outcome (Mersky & Reynolds, 2007; Widom & Maxfield, 2001).

Results of the current investigation follow others from our longitudinal data set in a line of inquiry focused on adult outcomes of various sorts (substance use, physical and mental health, and mental well-being; for example, T. I. Herrenkohl et al., 2013). Thus, results of the analyses reported in this article can be compared with those of our earlier studies on outcomes of substance use and physical and mental health, offering an opportunity to compare etiological and developmental processes related to child maltreatment across a range of indicators of adult functioning.

## Method

### Data and Procedure

As noted in other manuscripts (most recently, T. I. Herrenkohl et al., 2013; T. I. Herrenkohl, Klika, Herrenkohl, Russo, & Dee, 2012), data are from the Lehigh Longitudinal Study, which began in 1973 to 1974 as the evaluation portion of a child abuse and neglect treatment and prevention program in two counties of eastern Pennsylvania (R. C. Herrenkohl, Herrenkohl, Egolf, & Wu, 1991). Selection of the sample was accomplished over a 2-year period by referrals, from two county child welfare agencies, of all new and some ongoing cases in which there was at least one abused or neglected child 18 months to 6 years of age present in the home. The children served by child welfare agencies participated in one of several group settings (e.g., day care, Head Start). It was from these other settings, also located in the same two-county area, that children outside of child welfare were enrolled in the study.

The study design allows for comparisons of those children involved with child welfare for abuse and neglect reports to others in the sample who had no history of child welfare involvement, but whose families differed on other key variables, such as SES. The original sample contains five groups and totals 457 children: child welfare abuse ( $n = 144$ ), child welfare neglect ( $n = 105$ ), Head Start ( $n = 70$ ), day care ( $n = 64$ ), and middle-income nursery ( $n = 74$ ), and is composed of near equal numbers of males ( $n = 248$ ) and females ( $n = 209$ ) and families from diverse socioeconomic backgrounds.

The racial and ethnic composition of the sample is consistent with the makeup of the two-county area from which participants were drawn: 1.3% ( $n = 6$ ) American Indian/Alaska

Native, 0.2% ( $n = 1$ ) Native Hawaiian or Other Pacific Islander, 5.3% ( $n = 24$ ) Black or African American, 80.7% ( $n = 369$ ) White, 11.2% ( $n = 51$ ) more than 1 race, and 1.3% ( $n = 6$ ) unknown. Just more than 7% ( $n = 33$ ) self-identified as Hispanic or Latino and 91.5% ( $n = 418$ ) as Not Hispanic or Latino. For a very small percentage, 1.3% ( $n = 6$ ), the ethnicity of the child was unknown. Eighty-six percent of children were from two-parent households. The income level of 63% of families at the time was below US\$700 per month. Other families had incomes that ranged to more than US\$3,000 per month.

The first “preschool” wave of the study took place in 1976 to 1977 when children recruited to the study were 18 months to 6 years of age. A second “school age” assessment was conducted in 1980 to 1982. A third “adolescent” assessment of all youth participants (91% of the original sample) was conducted in 1990 to 1992. When they were assessed in adolescence, participants were 18 years of age on average. An adult wave of the study was completed in 2010, after intensive locating and interviewing efforts. Approximately 80% of the original sample still living ( $n = 357$ ) was located and assessed via a comprehensive, interviewer-administered survey.

In the adult assessment, participants were 36 years of age (range = 31–41) on average. The sample remains gender balanced: 171 (47.9%) females and 186 (52.1%) males. Analyses of the currently retained sample showed that, although more of the original child welfare abuse group was lost to attrition, there were no significant group differences in gender, age, childhood SES, or ratings of neglect or parent-reported physically abusive discipline. Study procedures were approved by the Human Subjects Division at the University of Washington and the Office of Research and Sponsored Programs at Lehigh University.

## Variables

**Child maltreatment**—Officially recorded child abuse and neglect was modeled as a dichotomous variable that distinguishes individuals originally recruited to the study from child welfare caseloads for abuse or neglect from those who were recruited from other group settings in the same two-county area (Head Start, day care, and middle-income nursery programs). The child welfare/maltreatment group (coded 1;  $n = 181$ ) consists of 98 males and 83 females. The comparison group (coded 0;  $n = 175$ ) consists of 88 males and 87 females. These numbers differ slightly from those reported in other reports because they account for missing data on the outcome variables under consideration.

**Adult crime**—Various measures of adult crime were scaled from 29 survey items on lifetime and past-year criminal offenses (see Appendix.). These survey items include a wide range of law-violating behaviors, and they were categorized according to crime types used by the National Incident-Based Reporting System (NIBRS; Federal Bureau of Investigation, 2013). NIBRS refers to several categories of offenses: crimes against persons, property, and society. In the current investigation, we scaled our variables to reflect these NIBRS categories as follows:

*Lifetime crimes against property* summed affirmative (0 = no crime, 1 = crime committed) responses to 17 survey items. Example items include “ever broken or tried to break into a building or vehicle,” “ever stolen or tried to steal a motor vehicle,” and

“ever tried to cheat someone by selling them something that was worthless.” The scaled variable has a range from 0 to 13 and a mean of 2.0 ( $SD = 2.84$ ). For the maltreatment group, scores on the variables range from 0 to 13 and the average is 2.4 ( $SD = 3.10$ ). Scores for those who were not involved with child welfare for abuse and neglect (i.e., comparison group) also range from 0 to 13 and the average is 1.58 ( $SD = 2.48$ ). Overall, 189 individuals (53.1% of the analysis sample) reported having committed one or more property crimes in their lifetime.

*Lifetime crimes against persons* summed 5 survey items coded to indicate the presence or absence of person crimes (0 = no crime, 1 = crime committed). These include “ever been involved in a gang fight,” “ever had or tried to have sexual relations with someone against their will,” and “ever hit anyone.” This scaled variable has a range of 0 to 6 with a mean of 1.17 ( $SD = 1.27$ ) for the full analysis sample. Scores for those in the maltreatment and comparison groups range from 0 to 6. The mean for the child maltreatment group is 1.4 ( $SD = 1.36$ ) and that of the comparison group is 0.94 ( $SD = 1.12$ ). Overall, 211 individuals (59.3%) reported having committed one or more crimes against persons in their lifetime.

*Lifetime crimes against society* summed 5 survey items, also coded 0 = no crime and 1 = crime committed. These include “ever paid someone for having sexual relations with you” and “ever sold hard drugs.” For the full analysis sample, this variable has a range of 0 to 5 with a mean of 0.58 ( $SD = 0.99$ ). For both the maltreatment and comparison groups, scores range from 0 to 5. The average for the maltreatment group is 0.77 ( $SD = 1.18$ ) and for the comparison group 0.39 ( $SD = 0.69$ ). In all, 121 (34.0%) individuals across both groups reported having committed at least one crime against society in their lifetime.

We also assessed *overall crimes (lifetime)* by summing the three categories of crimes (persons, property, and society). Although the possible range on this combined variable is 0 to 29, actual scores for the analysis sample fall between 0 and 23 and the mean is 3.76 ( $SD = 4.46$ ). The range of scores on this variable for the maltreatment group is 0 to 23 and the mean is 4.58 ( $SD = 4.98$ ). For the comparison group, the range is 0 to 18 and the mean is 2.91 ( $SD = 3.68$ ). A total of 258 participants (72.5% of the analysis sample) reported having perpetrated at least one crime in their lifetime.

*Crimes committed in the past year* were also analyzed. Low prevalence prohibited the investigation of individual crime categories (i.e., crimes against property, persons, and society), but it was possible to study overall crimes by combining the three categories. Ninety (25.3%) participants committed at least one crime of some sort in the past year. To address the skewed nature of score distribution for this variable, scores were inverse transformed. Scores of the transformed variable range from 0.1 to 1.0, with a mean of 0.85 and a  $SD$  of 0.26. The range for the maltreatment group is 0.09 to 1.0 and the group mean is 0.83 ( $SD = 0.28$ ). For the comparison group, the range is 0.14 to 1.0 and the mean is 0.88 ( $SD = 0.25$ ). The comparison group has a higher mean than the maltreatment group because the variable was inverse transformed so variable values became reverse ordered.

*Additional variables of crime history* included measures of arrest, convictions, and incarceration. One hundred thirty-four participants (38.0%) reported having ever been arrested. Eighty-two had ever been convicted (23.2%), and 56 (15.9%) had at some point been incarcerated. Measures of the number of arrests and convictions were also examined after having been inverse transformed. The variable for arrests, after transformation, ranges from 0 to 1 with a mean of 0.74 ( $SD = 0.35$ ). For the maltreatment and comparison groups respectively, the range is 0 to 1 and 0.01 to 1, and the group mean is 0.69 ( $SD = 0.37$ ) versus 0.80 ( $SD = 0.32$ ). For convictions, the range for the full sample is 0 to 1 with a mean of 0.85 ( $SD = 0.29$ ). For the maltreatment and comparison groups separately, the range is 0 to 1 versus 0.01 to 1, and the mean is 0.81 ( $SD = 0.32$ ) versus 0.89 ( $SD = 0.25$ ). The means of the comparison group are higher similarly because of inverse transformation.

### Covariates

Covariates in the multivariate analyses include childhood SES, gender, race, education level, marital status, and age. SES is a standardized composite measure of parents' occupational status, educational level, family income, and total rooms in the family's home. The SES variable has a mean of 0 and a  $SD$  of 3.29, ranging from  $-5.43$  to  $9.18$ . Gender was coded males = 1 ( $n = 186$ ) and females = 0 ( $n = 170$ ). Race was coded White = 0 ( $n = 280$ ) and "other" coded 1 ( $n = 74$ ). For education level, high school graduate or GED equivalent was coded 1 ( $n = 251$ ) and no high school degree was coded 0 ( $n = 67$ ). Marital status was coded married = 1 ( $n = 164$ ) and not married (single, divorced, separated, and widowed) = 0 ( $n = 192$ ). Participant age was left a continuous variable. Marital status, education, and age were added as covariates given their relation to crime in other studies (Farrington, 1986; King, Massoglia, & MacMillan, 2007; Sampson, Laub, & Wimer, 2006) and our having included these variable in analyses of two previously published articles on other adult outcomes. Age was included for analyses of past-year, but not lifetime, crime.

### Analysis

Analyses consist of group-based comparisons in which the child maltreatment group was compared with the comparison group on the specified outcomes without and then with covariates (SES, gender, race, education level, marital status, and age) added to the analysis. Tests of group differences used chi-square tests for dichotomous crime variables and independent samples  $t$  tests for counts.  $T$  tests of the count variables were conducted only among those who had at least one lifetime criminal offense ( $n = 313$ ) to investigate the extent of criminal involvement among those who had offended at least once. Each comparison was conducted using the total analysis sample and then repeated for males and females separately to illustrate how results compare across the two gender groups (Topitzes et al., 2011; Widom & White, 1997). Normality of count variables was checked using measures of skewness and kurtosis. Variables with elevated skewness and kurtosis were sensitivity tested by comparing models with original versus transformed scales. Original scales were maintained for ease of interpretation if no meaningful differences in results of the two model tests were observed.

Multivariate logistic and ordinary least squares (OLS) regressions were conducted to examine the conditional effects of child maltreatment on adult crimes after accounting for covariates. In multivariate OLS regressions, data for the full sample were analyzed. We also investigated the interaction of child maltreatment and gender to test for differences in the relationships for males and females. However, no statistically significant interaction effects were observed.

## Results

Tables 1 and 2 show percentage breakdowns and mean levels of each crime outcome for the full analysis sample and for males and females separately by group (maltreated vs. comparison). As shown in Table 1, analyses of adult lifetime and past-year crime for the full analysis sample show that, overall, individuals who had been maltreated engaged in more crime than did those in the comparison group. For example, 78.5% of maltreated adults reported having committed at least one criminal offense in their lifetime, compared with 66.3% of those in the comparison group ( $\chi^2 = 6.60, p < .05$ ). The mean number of lifetime criminal offenses reported by those with child maltreatment histories is also significantly higher: 5.27 versus 3.26 for the comparison group ( $t = -4.03, p < .01$ ). A similar pattern was observed for past-year offenses. Nearly 30% of those who had been maltreated reported having committed at least one offense in the year leading up to the adult assessment, compared with 20.6% of the comparison group ( $\chi^2 = 4.04, p < .05$ ). The mean number of past-year criminal offenses also registered higher for the child maltreatment group ( $t = 2.04, p < .05$ ).

Participants with maltreatment histories were found to have had more involvement with law enforcement over their lifetime (i.e., arrest, conviction, and incarceration; Tables 1 and 2). About 46% of those who were maltreated reported having been arrested, compared with just under 30% of those in the comparison group ( $\chi^2 = 9.83, p < .01$ ). Conviction and incarceration histories were similarly elevated for maltreated adults (28.2% and 20.4% vs. 18% and 11%, respectively). Chi-square tests were in both cases statistically significant (conviction:  $\chi^2 = 5.10, p < .05$ ; incarceration:  $\chi^2 = 5.83, p < .05$ ). Numbers of arrests and convictions, too, were higher on average among those who had been maltreated (arrest:  $t = 3.37, p < .01$ ; conviction:  $t = 2.79, p < .001$ ).

Analyses of crimes by category—property, person, and society—provided further evidence of a link at the bivariate level between child maltreatment (child welfare involvement) and later crime. For example, 65.7% of adults from the child maltreatment group reported having committed a crime against another person at some point in their lifetime, compared with 52.6% of those from the comparison group ( $\chi^2 = 6.40, p < .05$ ). The group difference was marginally significant for crimes against property ( $\chi^2 = 2.82, p < .10$ ) and society ( $\chi^2 = 3.60, p < .10$ ). The mean numbers of lifetime property, person, and society crimes were consistently higher among those in the child maltreatment group compared with the comparison group (2.77 vs. 1.78 [ $t = -3.05, p < .01$ ], 1.62 vs. 1.05 [ $t = -4.04, p < .001$ ], and 0.89 vs. 0.44 [ $t = -3.95, p < .001$ ], respectively).

Findings reported in Tables 1 and 2 show that the above pattern in maltreatment and crime is generally consistent for both males and females of the sample. For example, although crime generally is more prevalent among males in both groups (maltreatment and comparison), females who had been maltreated were more likely than those not maltreated to report having had some prior involvement in crime (68.7% vs. 50.6%;  $\chi^2 = 5.77, p < .05$ ). A similar pattern among females was observed for past-year crimes, although the chi-square test was in this case only marginally significant ( $\chi^2 = 2.76, p < .10$ ).

Further evidence of this pattern among females is shown in other categories. For example, about 54% of maltreated females perpetrated a crime against another person, compared with only 36% of those in the comparison group ( $\chi^2 = 5.94, p < .05$ ). Interestingly, there is no statistically significant difference in person crimes for males with a history of maltreatment and those without. With respect to conviction and incarceration history, males in the child maltreatment group were more likely than those in the comparison group to report prior convictions ( $\chi^2 = 2.86, p < .10$ ) and incarcerations ( $\chi^2 = 5.55, p < .05$ ), whereas females of the two groups did not differ statistically on these outcomes.

Results of Tables 3 and 4 are for the multivariate analyses in which crime outcomes were regressed on a variable that distinguished the child maltreatment group from the comparison group, as well as variables for (male) gender, childhood SES, minority racial status, marital status, and education level. In the tables, results are shown for outcome variables modeled as both dichotomous and count outcomes. As shown, with one exception (crimes against society), the significant association between child maltreatment and crime observed in bivariate tests was lost in these conditional tests, indicating that what appeared a significant main effect of maltreatment, shown in Tables 1 and 2, may possibly be due to variable confounding.

An examination of covariates in the model suggests persistent main effects for male gender. As expected, males were generally at higher risk for crime than females. The odds of lifetime crime overall for males was 4.6 times the odds for females (OR = 4.57,  $p < .001$ ). The odds of crimes against society for males were 5.16 times ( $p < .001$ ) greater than those for females. Childhood SES was also a significant predictor of overall lifetime crime, incarceration, and person crimes. Minority racial status predicted several outcomes, including past-year crime and crimes against society.

Marital status was also predictive of (inversely related to) most crime outcomes. For example, overall (lifetime) crimes, convictions, incarceration, and person and property crimes were significantly related to being married ( $p < .05$ ). Past-year crime and arrests were marginally significantly related to being married. Finally, education level (having earned a high school degree) predicted less involvement with criminal justice, fewer arrests, fewer convictions, and fewer incarcerations.

## Discussion

Findings of this study suggest that, although child maltreatment is related to adult crime at the bivariate level, the association of that variable with the outcomes under consideration



appears to be reduced (rendered nonsignificant) after other demographic variables are taken into account. Indeed, nearly all the previously shown significant effects of child maltreatment on adult crime outcomes were lost when covariates were included in the analysis. In this regard, findings of the current investigation appear to stand in some contrast to earlier published studies on these topics, including the prospective investigation of Widom and Maxfield (2001), which concluded that child maltreatment and crime are causally linked. In that study, adults who had been abused and neglected as children were more likely to have been arrested for a violent crime when compared with matched controls. Results of bivariate tests were replicated in multivariate regressions that controlled only for age, race, and gender.

In another study by English and colleagues (2002) of 877 individuals who, as children, had been under state supervision for substantiated abuse and neglect were at significantly higher risk for adult crime arrests than were matched controls. In that study, males and females who had been abused and neglected were more than twice as likely to be arrested for both nonviolent and violent crimes by the age of 24, according to data obtained from local, state, and federal sources. The risk of arrest for violent crime as an adult was particularly high for abused and neglected females compared with controls of the same gender. Similar to the approach of Maxfield and Widom (1996), analyses accounted for race and gender, but did not incorporate data on SES, education level, or marital status, all of which appeared to be important covariates of the models tested here. Moreover, data of both prior studies on child maltreatment and crime relied on official records, which underestimate the true occurrence of offenses that are committed.

Also of note, the findings of the current investigation differ from those of a previous investigation based on the same data set, where childhood SES did not account for the association between child maltreatment and other adults outcomes: adult substance use, mental health, and physical health (T. I. Herrenkohl et al., 2013; T. I. Herrenkohl et al., 2012). Similar, however, to the current investigation, education level and marital status were shown to be uniquely predictive of the outcomes in question, providing evidence of their potential role as protective factors.

Bivariate-level analyses that accounted for gender showed that maltreatment is a risk factor for crime among females and males both. However, several differences in that pattern were also observed. For example, there was a higher likelihood of crimes against persons among maltreated females compared with comparison females, but there was no such difference for males. In contrast, there was a significantly higher likelihood of convictions and incarcerations among maltreated males relative to comparison males, but this difference was not shown for females. Tests of gender interactions included in multivariate tests of crime outcomes were nonsignificant. Thus, findings hint at the possibility of gender differences in certain types of crimes, but further research is needed to determine whether this pattern is generalizable beyond the current sample.

### **Conclusion: Limitations and Future Directions**

The current investigation adds to what is known about the association between child maltreatment and crime by examining a range of adult outcomes longitudinally, by attending

to gender differences, and by focusing on how hypothesized covariates influence patterns shown in bivariate tests. Yet, there are several limitations that should be mentioned. As noted in earlier published reports of similarly structured analyses of the same data set, analyses do not attend to how maltreatment combines with other adversities to affect the outcomes in question (Middlebrooks & Audage, 2008). Moreover, analyses do not include variables to help explain “how” child maltreatment can increase the risk of later crime. Tests of theoretically guided hypotheses of developmental mechanisms are thus required. Moreover, child welfare involvement was used in this study as a proxy measure of child maltreatment, although it is known that child welfare records can underestimate the occurrence of abuse and neglect (T. I. Herrenkohl, 2011b). Last, findings are based on a sample from a particular geographic region and the sample itself is rather homogeneous with respect to race and ethnicity. Thus, findings may not generalize to diverse populations and results should therefore be interpreted with some caution. Nonetheless, this prospective, longitudinal investigation provides useful information for theory and practice—and it extends work already published in these important topics. As a next step in research on child maltreatment and crime, attention should be given to possible intervening factors and mechanisms that lead from early adversity to later adult crime. More attention should also be given to gender differences in this context, particularly given the apparent upswing, according to some sources, in the involvement of girls and young adult women in violence and other forms of antisocial behavior (Chesney-Lind & Belknap, 2004).

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## Appendix

### Appendix Twenty-Nine Survey Items Measuring Adult Crime

	Survey Item	Offense Category
1	Ever purposely damaged/destroyed property of your parents or other family members?	Property
2	Ever purposely damaged/destroyed property of your employer?	Property
3	Ever purposely damaged/destroyed property that did not belong to you, not counting family or work property?	Property
4	Ever purposely set fire or tried to do so?	Property
5	Ever broken or tried to break into a building or vehicle to steal something or just to look around?	Property
6	Ever stolen or tried to steal things worth more than US\$50?	Property
7	Ever taken a vehicle for a ride or driven without the owner's permission?	Property
8	Ever stolen or tried to steal a motor vehicle?	Property
9	Ever used checks illegally or used phony money to pay for something?	Property
10	Ever knowingly bought, sold, or held stolen goods?	Property
11	Ever stolen money or other things from your parents or other family members?	Property
12	Ever stolen money, goods, or property from the place where you work?	Property
13	Ever used or tried to use credit cards without owner's permission?	Property

	Survey Item	Offense Category
14	Ever snatched someone's purse or wallet or picked someone's pocket?	Property
15	Ever embezzled money?	Property
16	Ever used force or strong-arm methods to get money or things from people?	Property
17	Ever tried to cheat someone by selling them something that was worthless?	Property
18	Ever had or tried to have sexual relations with someone against their will?	Person
19	Ever been involved in a gang fight?	Person
20	Ever hit or threatened to hit parent(s)?	Person
21	Ever hit or threatened to hit your supervisor or other employee?	Person
22	Ever threatened to hit anyone?	Person
23	Ever hit anyone?	Person
24	When you hit this person, did you have the idea of seriously hurting or killing this person?	Person
25	Ever been paid for having sexual relations with someone?	Society
26	Ever paid someone for having sexual relations with you?	Society
27	Ever carried a hidden weapon?	Society
28	Ever sold marijuana or hashish?	Society
29	Ever sold hard drugs?	Society

## Biographies

**Hyunzee Jung**, PhD, MSW, is a research scientist at the Social Development Research Group in the School of Social Work, University of Washington. Her research includes the developmental impacts of child maltreatment and violence exposure with particular interests in prevention of antisocial behaviors and crimes in adolescence and adulthood. She also studies promoting factors and/or obstacles for desistance of crime and successful re-integration into society after release from incarceration.

**Todd I. Herrenkohl**, PhD, MSW, is the co-director of the Three-Dimensional Learning (3DL) Partnership and professor in the School of Social Work at the University of Washington. His funded research focuses on the development and prevention of youth violence, consequences of family violence for children, and resilience in vulnerable youth and families. His publications span a number of interrelated areas in violence research, prevention and wellness, and positive youth development. As co-director of the newly established 3DL Partnership, an interdisciplinary, university-based center joining the fields of social work and education, he and his colleagues are seeking to raise the profile and practice of 3DL—social, emotional, and intellectual—helping educators and youth organizations prepare young people for success in school, work, and life. Those affiliated with the 3DL Partnership conduct community-driven research to better understand the influence of 3DL on young people's capacity for near- and long-term success in life and provide professional development and mentoring to help students, educators, and youth service providers integrate 3DL in their work with young people. In all activities of the Partnership, an emphasis is placed on sharing research findings and evaluation tools to improve practice and to influence policy at the local and national levels.

**J. Bart Klika**, PhD, MSW, is a faculty in the School of Social Work at the University of Montana. His research focuses on the prevention of child maltreatment through understanding the etiology and consequences of maltreatment and the processes and factors associated with resilient functioning for maltreated children.

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**Table 1**

Crime Involvement in Relation to Child Maltreatment for Men and Women.

	<u>Full Sample (N = 356)<sup>a</sup></u>		<u>Maltreated (n = 181)</u>		<u>Comparison (n = 175)</u>		$\chi^2$
	n	%	n	%	n	%	
Crime ever	258	72.5	142	78.5	116	66.3	6.60*
Females	101	59.4	57	68.7	44	50.6	5.77*
Males	157	84.4	85	86.7	72	81.8	0.85
Crime past year	90	25.3	54	29.8	36	20.6	4.04*
Females	36	21.2	22	26.5	14	16.1	2.76 <sup>†</sup>
Males	54	29.0	32	32.7	22	25.0	1.32
Property crime ever	189	53.1	104	57.5	85	48.6	2.82 <sup>†</sup>
Females	69	40.6	38	45.8	31	35.6	1.82
Males	120	64.5	66	67.3	54	61.4	0.73
Person crime ever	211	59.3	119	65.7	92	52.6	6.40*
Females	76	44.7	45	54.2	31	35.6	5.94*
Males	135	72.6	74	75.5	61	69.3	0.89
Society crime ever	121	34.0	70	38.7	51	29.1	3.60 <sup>†</sup>
Females	31	18.2	18	21.7	13	14.9	1.30
Males	90	48.4	52	53.1	38	43.2	1.81

	<u>Full Sample (N = 353)<sup>b</sup></u>		<u>Maltreated (n = 181)</u>		<u>Comparison (n = 172)</u>		$\chi^2$
	n	%	n	%	n	%	
Arrest ever	134	38.0	83	45.9	51	29.7	9.83**
Females	43	25.7	28	33.7	15	17.9	5.51*
Males	91	48.9	55	56.1	36	40.9	4.29*
Conviction ever	82	23.2	51	28.2	31	18.0	5.10*
Females	22	13.2	14	16.9	8	9.5	1.97
Males	60	32.3	37	37.8	23	26.1	2.86 <sup>†</sup>
Incarcerated ever	56	15.9	37	20.4	19	11.0	5.83*
Females	12	7.2	7	8.4	5	6.0	0.39
Males	44	23.7	30	30.6	14	15.9	5.55*

<sup>a</sup>The total sample consists of 186 men and 170 women.

<sup>b</sup>The total sample consists of 186 men and 167 women due to missing data.

<sup>†</sup>  $p < .10$ .

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .

**Table 2**

Extent of Crime Involvement and Child Maltreatment for Men and Women.

Indicators	Full Sample ( <i>N</i> = 313) <sup>a</sup>		Maltreated ( <i>n</i> = 157)		Comparison ( <i>n</i> = 156)		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Total crime ever (count)	4.27	4.52	5.27	4.99	3.26	3.75	-4.03**
Females	2.79	3.51	3.65	4.08	2.01	2.71	-2.76**
Males	5.47	4.89	6.45	5.28	4.39	4.19	-2.86**
Total crime past year (count) <sup>b</sup>	0.83	0.27	0.80	0.29	0.86	0.26	2.04*
Females	0.85	0.26	0.81	0.28	0.89	0.24	1.80 <sup>†</sup>
Males	0.82	0.28	0.79	0.29	0.84	0.27	1.07
Property crime ever (count)	2.28	2.92	2.77	3.18	1.78	2.56	-3.05**
Females	1.44	2.20	1.86	2.56	1.07	1.76	-2.12*
Males	2.95	3.25	3.43	3.42	2.42	2.97	-2.07*
Person crime ever (count)	1.34	1.27	1.62	1.34	1.05	1.14	-4.04***
Females	0.96	1.10	1.23	1.13	0.72	1.01	-2.82**
Males	1.64	1.32	1.90	1.41	1.35	1.16	-2.80**
Society crime ever (count)	0.66	1.03	0.89	1.23	0.44	0.72	-3.95***
Females	0.39	0.87	0.56	1.10	0.23	0.56	-2.21*
Males	0.88	1.10	1.12	1.27	0.62	0.80	-3.12**
Arrest ever <sup>b</sup> (count)	0.71	0.36	0.64	0.37	0.78	0.33	3.37**
Females	0.82	0.29	0.74	0.33	0.88	0.25	2.73**
Males	0.63	0.38	0.57	0.39	0.69	0.37	2.00*
Conviction ever <sup>b</sup> (count)	0.83	0.30	0.78	0.34	0.87	0.26	2.79***
Females	0.90	0.23	0.87	0.27	0.94	0.19	1.74 <sup>†</sup>
Males	0.77	0.34	0.72	0.37	0.82	0.30	2.06*

<sup>a</sup>The total sample of 313 consists of 173 males and 140 females. Count variables were analyzed only among those who had ever committed at least one crime of a total of 36 survey items so as to examine the extent of criminal involvement. The 36 items consist of the 29 items used to scale crime outcome variables of this study in addition to 7 items that were excluded from the scaling. The seven items include "ever drunk in a public place"; "ever been loud, rowdy, or unruly in a public place"; and "ever bought, provided, or made available beer, wine, or liquor for someone under 21," and they were excluded due to too high a prevalence of such commitment.

<sup>b</sup>Reciprocal (inverse) transformed variables were used for past-year crimes and counts of arrest and conviction. An inverse-transformed value of a variable is one over its original value. Thus, higher values turn lower in number after transformation, and variable values become reverse ordered. As a result, higher mean values of past-year crime, arrest, and conviction of transformed variables indicate lower numbers in terms of original variables.

<sup>†</sup>*p* < .10.

\* *p* < .05.

\*\* *p* < .01.

\*\*\* *p* < .001.

**Table 3**  
Regression Coefficients (and Standard Errors) for Crime Overall and Law Enforcement Involvement.

Independent Variables	Lifetime Crime Ever		Past-Year Crime		Arrest Ever		Conviction Ever		Incarceration Ever <sup>a</sup>	
	Dichotomous	Counts	Dichotomous	Counts <sup>b</sup>	Dichotomous	Counts	Dichotomous	Counts <sup>b</sup>	Dichotomous	Counts
Maltreatment	0.13 (0.34) OR = 1.14	0.75 (0.58) β = 0.08	0.11 (0.33) OR = 1.11	-0.01 (0.04) β = -0.02	0.26 (0.30) OR = 1.30	-0.03 (0.05) β = -0.05	-0.25 (0.35) OR = 0.78	0.01 (0.04) β = 0.02	-0.66 (0.41) OR = 0.52	
Male	1.52 (0.29)***	2.92 (0.47)***	0.68 (0.28)*	-0.07 (0.03)*	1.07 (0.26)***	-0.20 (0.04)***	1.22 (0.31)***	-0.14 (0.03)***	1.37 (0.39)***	
Childhood SES	OR = 4.57	β = 0.33	OR = 1.97	β = -0.14	OR = 2.90	β = -0.28	OR = 3.37	β = -0.24	OR = 3.94	
	-0.13 (0.05)*	-0.14 (0.09)	-0.08 (0.06)	0.01 (0.01)	-0.05 (0.05)	0.01 (0.01)	-0.12 (0.06) <sup>†</sup>	0.01 (0.01)	-0.25 (0.09)**	
Minority race	OR = 0.88	β = -0.11	OR = 0.92	β = 0.08	OR = 0.27	β = 0.10	OR = 0.89	β = 0.10	OR = 0.78	
	0.60 (0.38)	0.71 (0.60)	0.45 (0.32)	-0.08 (0.04)*	-0.11 (0.32)	-0.02 (0.05)	-0.13 (0.36)	0.00 (0.04)	0.09 (0.41)	
Married	OR = 1.82	β = 0.06	OR = 1.57	β = -0.12	OR = 0.90	β = -0.02	OR = 0.88	β = 0.00	OR = 1.09	
	-0.37 (0.29)	-1.19 (0.50)*	-0.52 (0.30) <sup>†</sup>	0.05 (0.03)	-0.42 (0.27)	0.07 (0.04) <sup>†</sup>	-0.87 (0.32)**	0.11 (0.03)**	-0.96 (0.41)*	
Education	OR = 0.69	β = -0.13	OR = 0.60	β = 0.10	OR = 0.66	β = 0.10	OR = 0.42	β = 0.19	OR = 0.39	
	0.37 (0.36)	-0.17 (0.61)	0.18 (0.34)	0.01 (0.04)	-0.75 (0.31)*	0.13 (0.05)**	-0.43 (0.34)	0.07 (0.04) <sup>†</sup>	-1.08 (0.38)**	
Age (in adulthood)	OR = 1.44	β = -0.02	OR = 1.20	β = -0.02	OR = 0.47	β = 0.15	OR = 0.65	β = 0.11	OR = 0.34	
			0.02 (0.08)	-0.00 (0.01)						
Model fit <sup>c</sup>	47.88 (6)***	10.15 (6,309)***	18.27 (7)*	2.96 (7, 308)**	36.64 (6)***	8.94 (6, 308)***	33.16 (6)***	7.07 (6, 306)***	47.88 (6)***	
R <sup>2d</sup>	.20	.15	.08	.04	.15	.13	.16	.11	.25	

Note. Total sample size was reduced to 316 due to missing data on education level. A comparison of findings in models with and without education level showed no appreciable differences in the coefficients. OR = odds ratio; SES = socioeconomic status; OLS = ordinary least squares.

<sup>a</sup> Variable for incarceration is binary.

<sup>b</sup> Findings for reciprocal (inverse) transformed variables: An inverse-transformed value of a variable is one over its original value. Thus, higher values turn lower in number after transformation, and variable values become reverse ordered. As a result, an increase in a transformed variable indicates a decrease in terms of its original variable, so a positive association involving transformed outcome variables indicates an inverse association in terms of its original.

<sup>c</sup> Model fit statistics for binary outcomes (logistic regressions) are chi-squares (*df*), and those for continuous outcomes (OLS) are *F(df1, df2)*.

<sup>d</sup> R<sup>2</sup> values are adjusted for the number of predictors in OLS regression; Nagelkerke R<sup>2</sup> is reported for binary outcomes (logistic regressions).

<sup>†</sup> *p* < .10.



.100' < *p*  
\*\*\*  
.10' < *p*  
\*\*  
.50' < *p*  
\*

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**Table 4**

Regression Coefficients (and Standard Errors) for Crimes Against Persons, Property, and Society.

Independent Variables	Person Crimes Ever		Property Crimes Ever		Society Crimes Ever	
	Dichotomous	Counts	Dichotomous	Counts	Dichotomous	Counts
Maltreatment	-0.03 (0.31)	0.19 (0.17)	0.18 (0.29)	0.33 (0.37)	0.10 (0.32)	0.23 (0.13) <sup>†</sup>
Male	OR = 0.97 1.38 (0.26) <sup>***</sup>	$\beta = 0.07$ 0.75 (0.14) <sup>***</sup>	OR = 1.20 1.13 (0.24) <sup>***</sup>	$\beta = 0.06$ 1.62 (0.31) <sup>***</sup>	OR = 1.10 1.64 (0.28) <sup>***</sup>	$\beta = 0.12$ 0.55 (0.11) <sup>***</sup>
Childhood SES	OR = 3.98 -0.13 (0.05) <sup>**</sup>	$\beta = 0.29$ -0.05 (0.03) <sup>*</sup>	OR = 3.10 -0.03 (0.05)	$\beta = 0.29$ -0.07 (0.06)	OR = 5.16 -0.09 (0.05) <sup>†</sup>	$\beta = 0.28$ -0.02 (0.02)
Minority race	OR = 0.88 0.57 (0.34) <sup>†</sup>	$\beta = -0.14$ 0.19 (0.17)	OR = 0.97 0.30 (0.31)	$\beta = -0.09$ 0.21 (0.39)	OR = 0.91 0.42 (0.33)	$\beta = -0.06$ 0.31 (0.14) <sup>*</sup>
Married	OR = 1.76 -0.44 (0.27)	$\beta = 0.06$ -0.31 (0.15) <sup>*</sup>	OR = 1.35 -0.49 (0.26) <sup>†</sup>	$\beta = 0.03$ -0.70 (0.33) <sup>*</sup>	OR = 1.52 -0.34 (0.28)	$\beta = 0.13$ -0.18 (0.11)
Education	OR = 0.65 -0.11 (0.33)	$\beta = -0.12$ -0.04 (0.18)	OR = 0.62 0.18 (0.31)	$\beta = 0.13$ -0.00 (0.39)	OR = 0.71 -0.05 (0.33)	$\beta = -0.09$ -0.113 (0.14)
Model fit <sup>a</sup>	OR = 0.90 51.85 (6) <sup>***</sup>	$\beta = -0.01$ 9.19 (6, 309) <sup>***</sup>	OR = 1.20 28.63 (6) <sup>***</sup>	$\beta = 0.00$ 6.74 (6, 309) <sup>***</sup>	OR = 0.95 50.32 (6) <sup>***</sup>	$\beta = -0.05$ 8.62 (6, 309) <sup>***</sup>
$R^2$ <sup>b</sup>	.20	.14	.12	.10	.20	.13

Note. Total sample size was reduced to 316 due to missing data. OR = odds ratio; SES = socioeconomic status; OLS = ordinary least squares.

<sup>a</sup>Model fit statistics for binary outcomes (logistic regressions) are  $\chi^2$ -s (*df*), and those for continuous outcomes (OLS) are *F*(*df*).

<sup>b</sup> $R^2$ -s are adjusted for the number of predictors in the model. Nagelkerke  $R^2$ -s for binary outcomes in logistic regressions.

<sup>†</sup> $p < .10$ .

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .