Document Title:	**Effects of Child Maltreatment, Cumulative Victimization Experiences, and Proximal Life Stress on Adult Crime and Antisocial Behavior**
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Summary Report

Effects of Child Maltreatment, Cumulative Victimization Experiences, and Proximal Life Stress

on Adult Crime and Antisocial Behavior

Abstract

This study sought to replicate and extend research findings on subtypes of child maltreatment, childhood exposure to domestic violence, subsequent forms of victimization, and stress in relation to antisocial behavior, crime, and adulthood IPV perpetration and victimization. The study also investigated protective factors for maltreated children and predictors of self-reported crime desistence among maltreated and multiply victimized children. Data are from the Lehigh Longitudinal Study, an ongoing prospective investigation of children and families that began in the 1970s. The original sample was comprised of 457 children. Over 80% of the children, now adults, were assessed in 2008-2010 at an average of 36 years. Data on child maltreatment and related risk and protective factors were collected much earlier, beginning when participants were preschoolers, 18 months to 6 years of age.

Findings of seven publications, the products of this secondary data analysis project, provide further evidence of the relationship between child maltreatment and adult antisocial behavior and crime. They also point to instances in which this relationship is influenced by other variables, including those pertaining to the socialization of peers and partners. Findings raise the possibility that physical, emotional, and sexual abuse relate differently to self-reported crime and that predictors and pathways differ at times on the basis of gender. Further, several analyses highlight the risk-lowering effects of education variables (e.g., educational engagement, academic achievement, high school graduation), suggesting that attention should be given to incorporating perspectives on schooling and education in prevention and criminal justice policy.

Purpose of the project

This was a secondary data analysis project that sought to replicate and extend published findings on the adverse effects of child maltreatment and processes of resilience and protection. Primary outcomes include adult self-reported antisocial behavior and crime, as well as intimate

partner violence (IPV). In these analyses, we were particularly interested in the combined and unique effects of different subtypes of abuse, subsequent forms of victimization, and household and environmental stresses.

Specific aims of the project were as follows: Aim 1. To prospectively examine the effects of child maltreatment and childhood exposure to domestic violence on antisocial behavior, crime, and adulthood IPV perpetration and victimization; Aim 2. To prospectively examine the influence of cumulative victimization experiences on these outcomes in adulthood; Aim 3. To examine the extent to which proximally and earlier measured household and environmental stresses predict and help explain the effects of early forms of victimization on the proposed outcomes; Aim 4. To examine resilience in maltreated and multiply victimized children using a dynamic, life course model; and Aim 5: To comprehensively examine where and how gender moderates the relation between predictors and outcomes of the proposed aims (Aims 1-4).

Design of the project

The original design of the study called for a comparison of children from child welfare agencies and those recruited from other group settings (e.g., day cares, Head Start, nursery schools) located within a two-county area of Pennsylvania. The goal was to select children from these setting who were comparable in gender and age to those in child welfare, and to include families from different income and socioeconomic status categories. The full sample (N=457) contained 248 (54%) male and 209 female children. Of these, a majority (80.7%, $n = 369$) were White; 5.3% ($n = 24$) were Black or African American; 1.3% ($n = 6$) were American Indian/Alaska Native; 0.2% ($n = 1$) were Native Hawaiian or Other Pacific Islander; 11.2% ($n = 51$) were more than one race; and 1.3% ($n = 6$) had an unknown race and ethnicity. Eighty-six percent of children were from two-parent households. About 61% of families were in poverty, according to the income-to-needs ratio in 1976.

The first "preschool" wave of the study was completed in 1976-1977 when children were 18 months to 6 years of age. A second "school-age" assessment was completed in 1980-1982 when children were between 8 and 11 years of age. A third "adolescent" assessment was completed in 1990-1992. When they were assessed in adolescence, participants were 18 years of age on average (range: 14-23). A fourth "adult" wave of the study was completed in 2008-2010 when participants were, on average, 36 years of age (range: 31-41 years). Approximately 80% of the original study sample (N=357) was reassessed and the sample remained gender balanced: 171 (47.9%) females and 186 (52.1%) males. Although fewer members of the original child welfare abuse group completed the adult assessment, analyses showed that those who were retained did not differ from those lost to attrition on gender, age, childhood SES, or parent-reported neglect or physical discipline.

Data analysis

Data analysis methods consisted of basic descriptive models, regression analyses, structural equation models, and latent class analysis. Methods were chosen for consistency with the hypothesis under investigation and the distributional properties of the variables. Missing data were handled using techniques to obtain unbiased estimates of parameters and their standard errors. These include full-information maximum likelihood estimation (Arbuckle, 1995; Muthén & Muthén, 1998-2012) available in the Mplus structural equation modeling program (Muthén & Muthén, 2004).

Variables

Variables used in analyses are described below. Descriptive statistics for the measures listed in this report can be found in the relevant publications or provided upon request.

Child maltreatment

Officially recorded child maltreatment was measured using a dichotomous variable that distinguished individuals originally recruited to the study from child welfare caseloads for abuse or neglect from those who were recruited from other group settings. This variable was included in analyses as both a predictor of adult crime and also as a covariate (*Publication #'s 1, 2, 3, 4, 5, 6, 7*).

Physical and emotional abuse was based on parent reports of their (and others') use of physically and emotionally abusive disciplining strategies.. Data on physical abuse from the preschool wave of the study pertain to (a) the last 3 months and (b) prior to that last 3 months. Data on emotional abuse pertain to disciplining in the last 3 months only. At the school-age wave of the study, parents reported on their physically and emotionally abusive discipline for the past year. Various coding strategies were used to derive variables for specific analyses. Analyses include dichotomous measures of abuse/no abuse occurrence; abuse counts indicating the number of abusive disciplining strategies used; and a latent variable scaling. Analyses also include measures of abuse chronicity, which reflect the consistency in abusive disciplining over consecutive waves of the study (*Publication #'s 2, 3, 4, 5, 6, 7*).

A measure of sexual abuse was based primarily on participants' retrospective reports of having been sexually abused in childhood (prior to age 18 years) from the adolescent and adult waves of the study. Data were also compiled from other sources, including interview notes and child welfare case records (*Publication #'s 4, 5, 6*).

Neglect was measured at the preschool wave of the study using observations of the parent-child interactions and a family's living environment. Indicators were aligned with the "child level of living" scale developed and validated by Polansky and colleagues (Polansky, Borgman, & De Saix, 1972; Polansky, Cabral, Magura, & Phillips, 1983; Polansky, Chalmers, Buttenwieser, & Williams, 1978) and correspond with its four subscales—neglectful home

environment (e.g., dirty dishes, food scraps on floor, dirt, house smells of urine and/or spoiled food, broken glass and/or rusty cans, and garbage), physical neglect (evidence of poor dental and/or medical care of children and physical injuries), inadequate supervision (e.g., poor judgment about leaving a child alone or with an older sibling unable to care for the child), and emotional neglect. A composite measure of neglect was based on a sum of the four subscales (*Publication #5*).

Childhood exposure to intimate partner violence (IPV) was dichotomously measured in the preschool wave using parent self-reports to reflect the frequency with which parents threatened to physically harm the other; hit, pushed, or kicked; or destroyed something of value to the other (*Publication #6*).

Self-reported crime and offending

Adult and adolescent crime and offending: Measures of self-reported adult crime were scaled from 29 survey items on lifetime and past-year offenses included in the adult and adolescent waves of the study. These measures are based on Elliott, Dunford, and Huizinga's (1987) Self-Reported Delinquency Scale and reflect crimes against property (e.g., knowingly bought, sold, or held stolen goods; stole money, goods, or property; used or tried to use credit cards without owner's permission.); crimes against persons (e.g., had or tried to have sexual relations with someone against their will; was involved in a gang fight; hit or threatened to hit your supervisor or other employee); and crimes against society (e.g., was paid for having sexual relations with someone; paid someone for having sexual relations; carried a hidden weapon; sold drugs). Overall lifetime and past-year crime measures were also included (*Publication #'s 1, 2, 3, 4, 5*). A measure of adolescent offending based on the same 29 items was used in one publication (*Publication #5*).

Lifetime arrests, convictions, and incarceration are single-item measures, which indicate whether a participant had ever been arrested, convicted, or incarcerated. Measures of an individual's overall number of arrests and convictions were also included (*Publication #1*).

Intimate partner violence (IPV)

Measures of adult IPV include perpetration and victimization of physical, psychological, sexual violence, and injuries from violent interactions. In the adult wave of the study, participants self-reported on their experiences with IPV using items from the Revised Conflict Tactics Scale. These were dichotomously scaled to reflect the presence and absence of each for or type IPV exposure (*Publication #'s 6, 7*)

A measure of perceived intimidation and control was derived from the Women's Experiences with Battering Scale (Smith, Earp, & DeVellis, 1994; Smith, Smith, & Earp, 1999). Summed scores were recoded to a binary indicator of intimidation and control (*Publication #6*).

Adolescent violence victimization

In the adolescent wave of the study, youth participants reported on their past-year physical and sexual victimization. Responses indicated whether youth had been victimized, and by whom (e.g., boyfriend or girlfriend). Experiences that involved a boyfriend or girlfriend were taken as evidence of dating violence victimization. Responses that identified the perpetrator as someone other than a boyfriend or girlfriend were coded as general victimization. Responses that indicated a youth had been victimized by a boyfriend or girlfriend *and* another person were taken as evidence of both forms of victimization (*Publication #7*).

Partners

Partner's risk-taking behavior was based on five binary items, which pertain to the presence or absence of partners' involvement in delinquent behavior, including substance use, violence, and criminal involvement. Example questions include, "During past year did partner

regularly drink alcohol heavily?", "During past year did partner regularly physically beat or seriously hurt people?", and "During past year did partner regularly commit serious crimes?" Items were summed to form a composite measure of partners' involvement in risk-taking behavior (*Publication #4*).

Partner's warmth was based on six items assessing participant's perceived emotional support from their partner and their assessment of the quality of the relationship. Example questions include, "On average, about how often do you receive informal emotional support from your partner?", "How much warmth and affection have you received from your spouse/partner or boyfriend/girlfriend?", and "How much support and encouragement have your received from your spouse or partner/boyfriend or girlfriend?" Items were standardized and then averaged to form a single composite measure (*Publication #4*).

Peers

Antisocial peers in adulthood was based on 10 items assessing participant's perception of their peers' endorsement of antisocial behaviors. Example questions include, "How would close friends react to you if you sold hard drugs?", "How would close friends react to you if you hit/threatened to hit someone without reason?", and "How would close friends react to you if you damaged/destroyed property not belonging to you?" Items were standardized and then averaged into a single composite measure (*Publication #4*).

Peer approval of violence was measured in the adolescent wave of the study using questions about how an individual's friends would react if they "deliberately injured their spouse/boyfriend/girlfriend, e.g., hit, choked, or cut him/her" (peer approval for dating violence) or "hit or threatened to hit someone without any reason" (peer approval for general violence).

Each question was dichotomously coded to reflect approval (or disapproval) of the behavior in question (*Publication #7*).

Pro-violence attitudes was measured in the adolescent wave of the study to reflect attitudes toward violence generally and toward dating violence in particular. Youth respondents indicated how wrong they think it is "for someone to deliberately hit and injure their spouse/boyfriend/girlfriend" (indicative of favorable attitudes toward dating violence); or to "hit or threaten to hit someone without any reason" (indicative of favorable attitudes toward general violence). Each question was coded 1 (pro-violence attitude) or 0 (*Publication #7*).

Childhood and adolescent behavior problems and antisocial behavior

Childhood and adolescent externalizing and internalizing behavioral problems were assessed using the parent-report Child Behavior Checklist (CBCL) (Achenbach, 1978, 1988) and the Achenbach Youth Self-Report (YSR) form (Achenbach, 1997: YSR). Externalizing behaviors consist of aggression and nonaggressive, rule-breaking, or antisocial (delinquent) behaviors. Items include 'lie or cheat,' 'argue a lot,' 'get in many fights,' and 'use alcohol or drugs for nonmedical purposes.' Items were summed to form a composite measure of externalizing behaviors in the school-age and adolescent eaves of the study (*Publication #'s 2, 3, 4*). Internalizing behaviors consist of withdrawal, depression, anxiety, and somatic problems. Items include 'be secretive and keep things to myself,' 'cry a lot,' 'feel overtired,' 'feel worthless or inferior,' 'think/talk about killing self.' Items were summed to derive a single score of the externalizing behaviors for each assessment period (*Publication #3*).

Adolescent antisocial behavior was based on 39 lifetime antisocial behaviors including acts such as stealing, breaking and entering, and property damage, which were reported by youth during the adolescent wave of the study. Items were summed to form a single composite

measure, for consistency with earlier publications (Moylan et al., 2010) and with the scaling

strategy used in the National Youth Survey (Elliott et al., 1987) (*Publication #4*).

Education

Education attainment was assessed in the adult wave of the study and was coded to

reflect an education of 1= eighth grade or less; 2 = some high school; 3 = high school grad or

GED; 4 = some college; 5 = 2-year college grad; 6 = 4-year college grad; 7 = some post

graduate; 8 = post college/professional degree (*Publication #5*).

Educational engagement was measured using the Youth Self-Report (YSR) form of the

CBCL (Achenbach, 1997) to reflect participants' aspirations and expectations for education;

importance of their schoolwork; past educational experiences; satisfaction with their education;

and hours spent studying or doing schoolwork weekly outside of school. A composite measure of

educational engagement was formed by averaging the standardized scores of these seven

indicators (*Publication #5*).

Academic performance was measured using items from the YSR (Achenbach, 1997).

These items pertain to school grades in four subject areas: English or language arts, history or

social studies, arithmetic or math, and science. Another set of the same four items was provided

by parent interviews. A single additional item pertains to the grades that best describe the

adolescents' performance during the most recent grading period (1 = Mostly Fs to 5 = Mostly

As). A composite measure of academic performance was formed by averaging the standardized

scores of these items (*Publication #5*).

Suspensions was dichotomously measured using a single, youth self-report item that

pertains to whether an individual had ever been suspended from school in Grades 7 – 9

(*Publication #5*).

Covariates

Gender was included in analyses as a binary indicator for males and females (males coded 1 and females coded 0; *Publication #'s 1, 2, 3, 4, 5, 6, 7*). A measure of childhood socioeconomic status (SES) was also included. SES is a standardized composite measure of parents' occupational status, educational level, and family income (*Publication #'s 1, 2, 3, 4, 5, 6, 7*). Minority race was a binary indicator for 'White' versus 'other' (*Publication #'s 1, 2, 3*). Education level was included as a binary indicator for 'high school graduate or GED equivalent' versus 'no high school degree' (*Publication #1*). Marital status was a binary variable for 'married' and 'not married (single, divorced, separated, and widowed)' (*Publication #1*). Age was continuous, and separately coded for adolescence (*Publication #7*) and adulthood (*Publication #'s 1 ,3*). A measure of IQ was based on scores from the Wechsler Intelligence Scale for Children-Revised (WISC-R; Wechsler, 1974), which was administered in the school-age wave of the study (*Publication #5*).

Publications and Findings

Publications are listed in the table below, along with key findings under each study aim. Articles are available upon request.

	Aim 1. To prospectively examine the effects of child maltreatment and childhood exposure to domestic violence on antisocial behavior, crime, and adulthood IPV perpetration and victimization.	Aim 2. To prospectively examine the influence of cumulative victimization experiences on these outcomes in adulthood.	Aim 3. To examine the extent to which proximally and earlier measured household and environmental stresses predict and help explain the effects of early forms of victimization on the proposed outcomes.	Aim 4. To examine resilience in maltreated and multiply victimized children using a dynamic, life course model.	Aim 5: To comprehensively examine where and how gender moderates the relation between predictors and outcomes of the proposed aims (Aims 1-4).
1. *Jung, H., Herrenkohl, T. I., Klika, J. B., Lee, J. O., & Brown, E. C. (2015). Does child maltreatment predict adult crime? Reexamining the question in a prospective study of gender differences, education, and marital status. Journal of Interpersonal Violence, 30, 2238-2257. (PMC4436036)*	Bivariate analyses showed a significant association between officially recorded child maltreatment and later crime and more lifetime self-reported arrests, convictions, and incarcerations. Analyses of crimes by category—property, person, and society—provided further evidence of this link in bivariate models. In multivariate models that controlled for childhood SES, minority racial status, marital status, and education level, the significant association between child maltreatment and crime outcomes were mostly reduced to non-significance.			Having graduated from high school and being married predicted less crime in adulthood.	Tests of gender differences showed that crime is more prevalent among maltreated and non-maltreated males, although maltreated females were also at risk for crime.

2. *Jung, H., Herrenkohl, T. I., Lee, J. O., & Klika, J. B. (2015). Effects of physical and emotional child abuse and its chronicity on antisocial behaviors into adulthood. Violence & Victims, 30, 1004-1018. (PMC4991621)*	Parent reports of emotional abuse predicted later self-reports of crime both directly and indirectly through childhood externalizing, while physical abuse predicted crime only indirectly.	In subgroup analyses, chronicity of physical abuse was indirectly related to later crime among those who had been physically abused; chronicity of emotional abuse was neither directly nor indirectly related to crime among those who had been emotionally abused.			
3. *Jung, H., Herrenkohl, T. I., Lee, J. O., Hemphill, S. A., Heerde, J. A., & Skinner, M. L. (2015). Gendered pathways from child abuse to adult crime through internalizing and externalizing behaviors in childhood and adolescence. Journal of Interpersonal Violence, Advance online publication. doi: 10.1177/0886260515596146. (PMC4991959)*	In a study of developmental pathways to adult crime, physical and emotional child abuse was associated with internalizing and externalizing behaviors in the elementary school years for males and females. Gender differences in pathways from internalizing and externalizing behaviors to later crime were observed.			Internalizing behaviors in childhood among males predicted a lower risk of adult crime.	Internalizing behaviors in childhood increased the risk of adult crime for females only. Externalizing behaviors increased the risk of adult crime for males only.
4. *Lee, J. O., Herrenkohl, T. I., Jung, H., Skinner, M. L., & Klika, J. B. (2015). Longitudinal examination of peer and partner influences on gender-specific pathways from child abuse to adult crime. Child Abuse and Neglect, 47, 83-93. (PMC4567933)*	For both genders, physical and emotional child abuse predicted adult crime indirectly through child and adolescent antisocial behavior/crime, as well as adult partner and antisocial peer influences. Sexual abuse also predicted adolescent antisocial behavior, but only for males.		Risk influences from partners and peers help to explain the link between child abuse and later crime.	For males, partner warmth reduced the risk of adult antisocial peer involvement, a predictor of adult crime.	For females, having an antisocial partner predicted an affiliation with antisocial peers, and that in turn predicted adult crime. For males, having an antisocial partner was associated with less partner warmth, which in turn predicted an affiliation with antisocial peers, itself a proximal predictor of adult crime.

5. *Jung, H., Herrenkohl, T. I., & Skinner, M. L. (2016, under review). Does educational success mitigate the effect of child maltreatment on later offending patterns? Journal of Interpersonal Violence.*	Latent class analysis revealed patterns of chronic offending, adolescent offending (desistence), and stable low offending. Physical-emotional and sexual abuse predicted a higher likelihood of chronic offending relative to patterns of desistence and low-level offending. No significant interactions of child abuse and education variables were detected.			Although no significant interactions of child abuse and education variables were identified, educational engagement and academic achievement predicted a higher likelihood of stable low offending compared to adolescent or chronic offending. Educational attainment predicted a higher likelihood of desistence relative to chronic offending.	There was no evidence that the inclusion of gender in the model changed the nature of the offender classes.
6. *Jung, H., Herrenkohl, T. I., Skinner, M. L., Lee, J. O., & Klika, J. B. (2016, under review). Gender differences in intimate partner violence (IPV): A predictive analysis of IPV by child abuse and domestic violence exposure during early childhood. Violence Against Women.*	Five latent classes of IPV victimization and perpetration were generated from adult self-reports. There were no statistically significant main effects of child abuse and child exposure to IPV on later adult IPV class membership. However, significant gender interactions were found for physical-emotional child abuse and childhood exposure to IPV as well as sexual abuse.	Analyses examined the association between child abuse victimization and adult IPV victimization and perpetration.			Physical-emotional child abuse and childhood domestic violence exposure was more strongly associated with multi-type violence and intimidation class membership for males. Sexual abuse was associated with a higher likelihood of multi-type violence and intimidation for females.

7. *Herrenkohl, T. I. & Jung, H. (2016, in press). Effects of child abuse, adolescent violence, peer sanctions, and pro-violence attitudes on intimate partner violence in adulthood. Criminal Behaviour and Mental Health.*	In multivariate models, officially recorded child maltreatment predicted IPV perpetration in adulthood.	Dating violence victimization and peer approval of dating violence in adolescence predicted IPV victimization and perpetration in adulthood.		Parent-reported physical and emotional child abuse was not predictive of IPV outcomes after accounting for other variables in the analysis, including dating violence victimization.	Male gender predicted adult sexual IPV victimization and physical IPV perpetration, such that males were at lower risk of each predicted outcome.

Limitations

While this study has a number of important strengths, including its longitudinal design, gender balanced sample, examination of various subtypes of abuse, and focus on resilience and protective factors, it also has limitations. These include a relatively homogenous sample with respect to race and ethnicity and a reliance on self-reports of crime and antisocial behavior. The composition of the sample limits the extent to which findings can be readily generalized to other populations. Replication of these findings in other longitudinal studies with diverse samples will provide further evidence of the relationships under investigation.

Implications for criminal justice policy and practice

Findings provide further evidence of the relationship between child maltreatment and adult antisocial behavior and crime, but also point to instances in which that relationship is influenced by other variables. Analyses raise the possibility that physical, emotional, and sexual abuse relate differently to self-reported crime and that predictors and pathways differ at times on the basis of gender. These are important findings for theory, practice, and policy in that they suggest the need to pay greater attention to gender in the development and tailoring of crime prevention strategies (Chesney-Lind & Belknap, 2004). Further, there is some evidence from this project that the associations between child maltreatment and later forms of victimization are influenced by the socialization of peers and partners to antisocial behavior, although factors implicated in this process are not all the same for males and females. In that several analyses highlight the risk-lowering effects of education variables (e.g., educational engagement, academic achievement, high school graduation), attention should also be given to incorporating perspectives on schooling and education in prevention and criminal justice policy (Fagan & Catalano, 2013). Programs focused on strengthening the educational experiences of

vulnerable and at-risk youth, and keeping these youth connected and engaged in school through high

school, are important goals for prevention (Monahan, Oesterle, & Hawkins, 2010), which emphasizes

the need to identify and intervene early and sometimes over consecutive years in order to reduce risk

factors and enhance protective factors to lessen crime (e.g., Fagan & Catalano, 2013; Hawkins &

Herrenkohl, 2003; Herrenkohl, Chung, & Catalano, 2004; Jenson, Powell, & Forrest-Bank, 2011;

Wilson & Lipsey, 2007).

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