

Early Physical Abuse and Adult Outcomes

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abstract

BACKGROUND: Because most physical abuse goes unreported and researchers largely rely on retrospective reports of childhood abuse or prospective samples with substantiated maltreatment, long-term outcomes of physical abuse in US community samples are unknown. We hypothesized that early childhood physical abuse would prospectively predict adult outcomes in education and economic stability, physical health, mental health, substance use, and criminal behavior.

METHODS: Researchers in two multisite studies recruited children at kindergarten entry and followed them into adulthood. Parents completed interviews about responses to the child's problem behaviors during the kindergarten interview. Interviewers rated the probability that the child was physically abused in the first 5 years of life. Adult outcomes were measured by using 23 indicators of education and economic stability, physical health, mental health, substance use, and criminal convictions reported by participants and their peers and in school and court records.

RESULTS: Controlling for potential confounds, relative to participants who were not physically abused, adults who had been abused were more likely to have received special education services, repeated a grade, be receiving government assistance, score in the clinical range on externalizing or internalizing disorders, and have been convicted of a crime in the past year (3.20, 2.14, 2.00, 2.42, 2.10, and 2.61 times more likely, respectively) and reported levels of physical health that were 0.10 SDs lower. No differences were found in substance use.

CONCLUSIONS: Unreported physical abuse in community samples has long-term detrimental effects into adulthood. Pediatricians should talk with parents about using only nonviolent discipline and support early interventions to prevent child abuse.



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Dr Lansford conceptualized and designed the study, drafted parts of the initial manuscript, and reviewed and revised the manuscript; Dr Godwin conducted the analyses, drafted parts of the initial manuscript, and reviewed and revised the manuscript; Drs McMahon, Crowley, Pettit, Bates, Coie, and Dodge designed the data collection instruments, oversaw data collection, and critically reviewed the manuscript for important intellectual content; and all authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

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WHAT'S KNOWN ON THIS SUBJECT: The converging evidence on a range of detrimental outcomes associated with abuse is impressive, yet findings in US studies have relied on children in the Child Protective Services system, cross-sectional designs, adults' retrospective reports of childhood experiences, or short-term prospective designs.

WHAT THIS STUDY ADDS: In a community sample of 1048 children followed from kindergarten into adulthood, negative economic, health, and criminal outcomes in adulthood were more than twice as likely for adults who were abused early in childhood compared with those who were not.

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Approximately 1 in 4 children have a lifetime history of maltreatment, and 1 in 7 children have been maltreated in the last year.¹ About 18% of maltreated children have been physically abused.² However, physical abuse is often undetected, particularly if it does not result in injuries severe enough to require medical attention. In high-income countries, prevalence estimates obtained through self- or parent reports are >10 times higher than official rates of substantiated maltreatment.³

Children who have been abused and identified by Child Protective Services (CPS) are at heightened risk for physical and mental health problems during childhood and later in life, as well as being at risk for dropping out of school, becoming teenage parents, and perpetuating cycles of abuse by victimizing intimate partners and their own offspring.⁴⁻⁹ The converging evidence on a range of detrimental outcomes associated with abuse is impressive, yet most findings have been based on studies with children who are in the CPS system, cross-sectional designs, adults' retrospective reports of childhood experiences, or short-term prospective designs. With few notable exceptions,¹⁰ long-term prospective studies following community samples from early childhood into adulthood are lacking. Risk levels for children who have been abused but not detected might be higher than for children in the CPS system because the system intervenes to lower risk, or risk levels for community samples might be lower because children in the CPS system represent a more severely abused group or involvement in the CPS system actually increases risk. This study is the longest known investigation of a community sample of abused and nonabused children followed into adulthood.

Adults who retrospectively report physical abuse during childhood

experience more health problems and behavioral maladaptation during adulthood than adults who do not report having been abused during childhood.¹¹⁻¹³ Adults' retrospective reports of adverse childhood experiences (including abuse) are poorly to moderately correlated with those experiences assessed prospectively.^{14,15} Retrospective reports also are subject to factors that bias individuals toward over- and underreporting adverse childhood experiences.¹⁴ In addition, participants in retrospective studies often are recruited through treatment programs, which may bias samples by including individuals who are experiencing negative outcomes severe enough to warrant treatment.

Prospective longitudinal studies of children from the child welfare system who were identified through substantiated reports of maltreatment also have shown that children who were maltreated are at greater risk for negative outcomes during adulthood.¹⁶⁻¹⁸ One drawback of relying on substantiated cases of abuse is that these may represent only cases severe enough to be brought to the attention of CPS, when most cases of abuse go unreported.³ In substantiated cases, experience of abuse may be confounded with experiences deriving from contact with the child welfare system, such as placement in foster care.

To avoid possible biases in retrospective reports of abuse or from samples drawn from the child welfare system, in the current study, we use data from two prospectively followed community samples. The main research question is whether early childhood physical abuse prospectively predicts adult outcomes in education and economic stability, physical health, mental health, substance use, and criminal behavior. Associations between childhood abuse and adult outcomes may be confounded by other risk factors, such as poverty and family

stress, which predict both the experience of abuse and later negative outcomes. Therefore, we controlled for a range of potential confounds.

METHODS

Participants

All procedures and measures were approved by the Institutional Review Boards at the universities involved in the study. Participants were drawn from two multisite longitudinal studies: Child Development Project (CDP)¹⁹ and Fast Track (FT)²⁰ (see Fig 1, Supplemental Information).

These two studies include many of the same measures and began at similar periods in the children's lives. CDP includes two cohorts that entered kindergarten in 1987 and 1988; the FT subsample entered kindergarten in 1990. CDP began interviewing parents and children annually in the summer before kindergarten; FT began interviewing in the summer after kindergarten. Researchers in both studies gathered information about the children's experiences from birth through age 5, annually until age 20, and periodically thereafter. The combined sample was 50% male; 30% were Black (66% white and 4% other race and ethnicity). On the basis of data collected in the first year of each study (CDP: mean age = 5.32, SE = 0.01; FT: mean age = 6.42, SE = 0.02), 32% of children lived in single-parent homes, and 18% of mothers had not completed high school (typically accomplished at age 18).

Young adult data were collected between 2009 and 2011 for both studies (80% of the original living participants for CDP and 86% for FT). The weighted average age at interview was 25.09 years (SE = 0.09) among CDP participants and 24.52 (SE = 0.03) among FT participants. In addition to collecting self-report data, participants nominated a peer for an

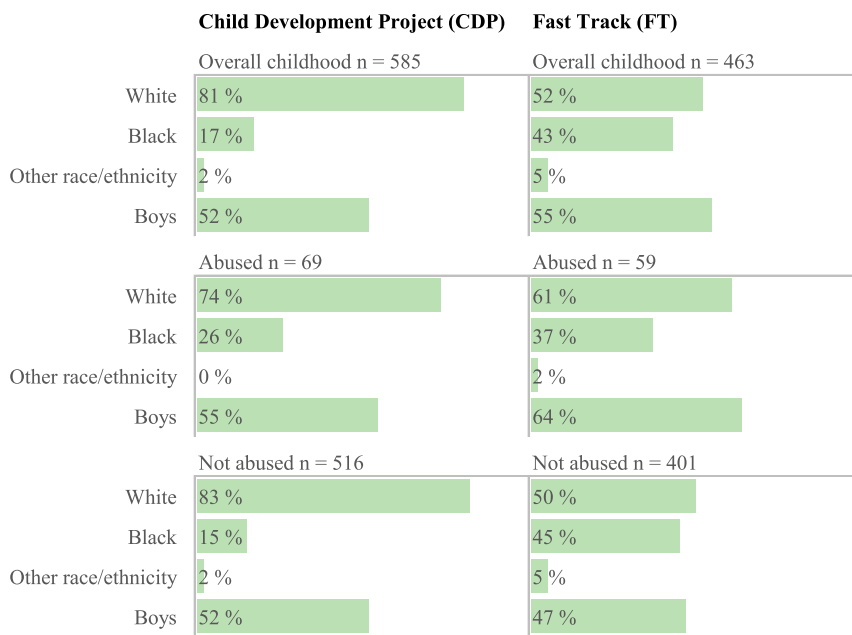


FIGURE 1 Demographic characteristics of participants. Three FT participants are missing data on the abuse variable.

independent interview by providing the name and contact information for someone who knows them well (eg, spouse, friend), who was subsequently contacted by the research team until the peer provided an interview or declined to participate. If we could not reach the peer after repeated attempts or if the peer declined to participate, we reached out to a second peer nominated by the participant. Modest financial compensation was provided to parents, and small age-appropriate gifts were provided to children for their initial participation. Modest financial compensation also was provided to participants and their peers for the adult follow-ups. Parents provided informed consent until the participants turned 18, when they began providing their own informed consent.

Measures of Early Life Circumstances

By using data from the first year of each study, several variables were constructed to capture early life circumstances. After collecting

information from parents in face-to-face interviews about children's problem behaviors, techniques parents used to address these behaviors, and details about physical punishment used by parents, interviewers rated the probability that the child suffered physical abuse between the ages of 1 and 5 on a 5-point scale (extremely unlikely, probably not, suspected or possible, probably occurred, and authorities involved, on the basis of the criterion of having bruises or marks that lasted >24 hours). Physical abuse was coded 1 if, on the basis of the parent's report, the interviewer rated the likelihood of physical abuse as suspected or possible, probably occurred, or authorities were involved.²¹ For ethical reasons (because this was a community sample, not a sample that had been identified as having been maltreated) and reasons related to concerns about young children's suggestibility and the reliability of young children's reports,^{22,23} we relied on caregivers' rather than children's reports of potential physical abuse. Early family

stress is a sum score across parent reports of major (2), minor (1), or nonexistent (0) problems in the child's first 5 years of life in 6 areas: financial issues, legal issues, conflict within the family, a move or major home remodeling, separation or divorce, and parent-child separation. Early child health problems are an average across 2 parent-reported items describing major (2), minor (1), or nonexistent (0) child health problems during infancy and between ages 1 and 5. Family socioeconomic status (SES) in the first year of the study is a continuous scale derived by Hollingshead²⁴ by using parents' occupation classification and years of education.²⁵ Child's sex and race and ethnicity were reported by parents.

Measures of Young Adult Outcomes

In this study, we address well-being in young adulthood across 5 domains: education and economic stability, physical health, mental health, substance use, and criminal behavior. Whenever possible, scales include both self- and peer-reported data. For continuous scales, self- and peer-reported scores are averaged. Dichotomous scales are coded 1 if either reporter scale is coded 1 and 0 otherwise. If a scale is missing for one reporter, the nonmissing value is used. Outcomes capturing college completion, employment, government assistance, and risky sexual behavior are based solely on self-reports. Young adulthood measures were administered primarily in online interviews but also through telephone, mail, or in-person interviews if the participant was not able to complete an online interview.

Education and Economic Stability

On the basis of administrative school records, indicators were created for 2 cumulative educational experiences: ever repeating a grade and ever receiving special education services during primary or secondary school. An indicator for completing a 4-year college degree was created on the

basis of self-reported educational attainment in young adulthood. By using items from the National Longitudinal Survey of Youth,²⁶ two additional self-reported indicators were constructed: current full-time employment or enrollment in higher education and receipt of public assistance in the past 12 months (eg, welfare; Supplemental Nutrition Program for Women, Infants, and Children).

Physical Health

Participants and peers reported on participants' health using 4 items from the Short-Form Health Survey.²⁷ Items were averaged to create a general health index (including overall health status, presence of chronic conditions, magnitude of bodily pain, and presence of physical health issues that infringed on work; $\alpha = .72$). By using self-reported items from the Overview of Sexual Experiences,²⁸ risky sexual behavior in the past year was constructed by multiplying the number of sexual partners in the last year by the sum of two scales: new-partner condom nonuse (0 = no new partner, 1 = always use condom, 2 = most times use condom, 3 = about half the time, 4 = sometimes nonuse, 5 = never use) and regular-partner condom nonuse (1 = always use condom to 5 = never use).

Mental Health

Using the Adult Self Report and the Adult Behavior Checklist,²⁹ participants and peers, respectively, reported whether statements about participants' emotions and behaviors were "not true" (0), "somewhat or sometimes true" (1), or "often true" (2). Recommended indicators for meeting the clinical range for the following *Diagnostic and Statistical Manual of Mental Disorders* (DSM), *Fourth edition* diagnoses were then calculated: antisocial personality ($\alpha = .88$), attention deficit/hyperactivity disorder ($\alpha = .89$), avoidant personality ($\alpha = .75$), somatic ($\alpha =$

.81), anxiety ($\alpha = .81$), and depression ($\alpha = .88$) disorders.²⁹ In addition, two summary scales capture whether the clinical range was met for any externalizing disorder and any internalizing disorder. Finally, a continuous scale capturing happiness was created by summing across 16 Adult Self Report items, such as "I feel happy" and "I enjoy being with people" ($\alpha = .89$).³⁰

Substance Use

By using items from Tobacco, Alcohol and Drugs, Version III,³¹ self- and peer-reported indicators of participants' weekly use of marijuana, opioids, and other illicit drugs as well as hazardous drinking were created. A single item captured marijuana use frequency (never, less than once per month, 1–4 times per month, 1–3 times per week, 4–6 times per week, and almost every day) in the past 12 months. If a respondent reported weekly use of any of the following drugs, then the indicator for other illicit drugs was coded 1: amyl nitrate or poppers, cocaine or crack, ecstasy, hallucinogens, heroin, inhalants, opiates, Oxycontin, angel dust, rohypnol, steroids, sedative or tranquilizers, or stimulants or amphetamines. For men, hazardous drinking was defined as 21 or more drinks per week or having four or more binge drinking sessions per week. For women, the definition was having 14 or more drinks per week or having four or more binge drinking sessions per week. For both men and women, binge drinking was defined as five or more drinks on one occasion, consistent with guidelines from the Centers for Disease Control and Prevention.³²

Criminal Behavior

Juvenile and adult court records were collected from county offices as well as through national database searches based on full name, birthdate, and social security number ($n = 968$; 92%). By using these data, indicators for whether the participant was ever

convicted of 3 types of crime were created: violent crimes (eg, aggravated or armed robbery, murder, rape, kidnapping); substance crimes (eg, manufacturing and possession with intent to sell); and property or public order crimes (eg, trespassing, theft, vandalism). Finally, by using self- and peer-reported data, an indicator for being convicted of a crime in the past 12 months was created.

Analysis Plan

A full information maximum likelihood model to account for missing data was estimated for each of the adult outcomes. Probability weights were used to account for sampling. In addition to the indicator for experiencing early physical abuse, each model controlled for sex, race and ethnicity, age at interview, and several variables capturing other early life circumstances, including living in a single parent household, family SES, and child health problems and family stress experienced during the child's first 5 years of life. Initial models included site by cohort indicators for CDP and site only indicators for FT (because this FT sample only includes one cohort); substantive findings were not affected by site or cohort.

RESULTS

Odds ratios and standardized coefficients and significance tests are reported in Table 1 for all analyses.

Education and Economic Stability

The odds of ever receiving special education services are 3.20 times higher for those who experienced early abuse (46.90%) relative to those who did not (20.76%). Similarly, the odds of repeating a grade are 2.14 times higher for those who experienced early abuse (54.06%) relative to those who did not (28.49%). Only 13.65% of those who experienced abuse completed a 4-year college degree compared

TABLE 1 Model Results Testing Differences on Adult Outcomes as a Function of Having Been Physically Abused or Not in Early Childhood

Adult Outcome	Weighted Proportion or Mean (SE)		Impact of Early Abuse	
	Early Abuse (n = 93)	No Early Abuse (n = 753)	Odds Ratio or SE	P
Education or economic stability				
Ever received special education services	46.90	20.76	3.20	.001
Ever repeated a grade	54.06	28.49	2.14	.01
Completed college or more	13.65	30.13	0.72	.41
Currently full-time employed or enrolled in higher education in last year	53.23	68.74	0.66	.13
Received government assistance in past 12 mo, self report	19.52	9.88	2.00	.05
Physical health				
General health index, average self and peer report	0.74 (0.02)	0.81 (0.01)	-0.10	.03
Risky sexual behavior scale, self report	9.31 (1.48)	7.60 (0.45)	0.04	.35
Mental health, self or peer report				
Any DSM externalizing clinical range	24.28	11.25	2.42	.01
DSM clinical range, antisocial personality	19.87	7.71	2.80	.01
DSM clinical range, ADHD problems	16.12	5.79	3.15	.001
Any DSM internalizing clinical range	40.35	22.93	2.10	.01
DSM clinical range, anxiety	13.01	6.25	1.99	.08
DSM clinical range, avoidant personality	12.50	7.76	1.60	.21
DSM clinical range, depression	16.15	9.73	1.14	.69
DSM clinical range, somatic	22.37	12.99	1.68	.12
Happiness	22.65 (0.52)	23.89 (0.17)	-0.05	.23
Substance use, self or peer report				
Weekly hazardous drinking past year	9.12	8.84	0.93	.89
Used marijuana weekly past year	16.28	14.77	0.79	.52
Used other drugs weekly past year, excluding marijuana	11.43	7.75	1.06	.89
Criminal behavior				
Lifetime any drug conviction, court record data	19.66	10.34	1.62	.16
Lifetime any property or public order conviction, court record data	33.37	23.10	1.32	.28
Lifetime any violent crime convictions, court record data	26.69	15.95	1.37	.26
Convicted in past 12 mo, self or peer report	17.96	7.15	2.61	.01

Analyses controlled for sex, race and ethnicity, age at interview, and several variables capturing other early life circumstances, including living in a single parent household, family SES, and child health problems and family stress experienced during the child's first 5 years of life. ADHD, attention-deficit/hyperactivity disorder.

with 30.13% of those who did not experience abuse, but this difference is not statistically significant.

Experiencing early abuse is related to later economic stability. The odds of receiving government assistance in young adulthood are 2.00 times greater for those who experienced early abuse (19.52%) compared with those who did not (9.88%). Only 53.23% of those who experienced early abuse were full-time employed or enrolled in higher education compared with 68.74% of those who

did not, but this effect was not statistically significant.

Physical Health

Among those who experienced early abuse, the average health index is 0.74 (SE = 0.02) compared with 0.81 (SE = 0.01) among those who did not experience early abuse. Experiencing early abuse is associated with a statistically significant 0.10 SD decrease in health scores. Among those who experienced early abuse, the average risky sexual behavior score is 9.31 (SE = 1.48) compared

with 7.60 (SE = 0.45) among those who did not. Early abuse is not significantly related to risky sexual behavior in young adulthood.

Mental Health

The odds of meeting the clinical range for any externalizing disorder are 2.42 times higher for those who experienced early abuse (24.28%) relative to those who did not (11.25%). The odds of meeting the clinical range for any internalizing disorder are 2.10 times higher for those who experienced early abuse (40.35%) relative to those who did not (22.93%). Odds for specific externalizing and internalizing disorders are reported in Table 1. No statistically significant difference in happiness was found between those who did and did not experience early abuse.

Substance Use

Comparing those who did and did not experience early abuse, 9.12% vs 8.84% reported weekly hazardous drinking, 16.28% vs 14.77% reported weekly marijuana use, and 11.43% vs 7.75% reported weekly use of other illicit drugs. The logistic regression models revealed no statistically significant relation between early abuse and weekly substance use.

Criminal Behavior

On the basis of administrative court records, the prevalence of any conviction is higher among those who experienced early abuse compared with those who did not (drug conviction: 19.66% vs 10.34%, property or public order conviction: 33.37% vs 23.10%, violent crime conviction: 26.69% vs 15.95%). However, the odds of lifetime convictions are not significantly different for those who experienced abuse and those who did not. On the basis of self- and peer-reported data in young adulthood, the odds of being convicted in the last 12 months are 2.61 times higher for those who experienced early abuse (17.96%)

relative to those who did not (7.15%), a statistically significant difference.

DISCUSSION

After controlling for many preexisting conditions and common causes of stressors related to maltreatment, including living in a single parent household, family SES, and child health problems and family stress experienced during the child's first 5 years of life, experiencing physical abuse in the first 5 years of life predicted worse outcomes in four of five domains of adult functioning investigated. Namely, early physical abuse predicted three of five educational and economic stability outcomes (increasing the likelihood of having received special education services, having repeated a grade in school, and being on government assistance in early adulthood), one of the two physical health outcomes (lower physical health index), four of eight mental health outcomes (meeting diagnostic criteria for any externalizing disorder; any internalizing disorder; or the specific disorders of antisocial personality and attention-deficit/hyperactivity disorder), and one of four criminal behavior outcomes (self- or peer-reported criminal conviction). Early physical abuse did not predict substance use after accounting for potential confounds.

The findings have several implications for pediatric practice. The majority of child abuse goes unreported to authorities,³ yet these findings suggest that even unreported physical abuse in community samples can have long-term, high-impact detrimental effects into adulthood. Pediatricians are well positioned to talk with parents about the importance of using only nonviolent forms of discipline, such as time outs and reasoning, and have been encouraged to do so by the American

Academy of Pediatrics.³³ Parents consider pediatricians to be a reliable source of information about discipline.³⁴ However, conversations about discipline should be conducted in a way that is supportive rather than denigrating to parents so as not to jeopardize future health care. Pediatricians also can support early interventions that have been found to be effective in preventing child abuse, such as nurse home visiting programs.³⁵

The study has several strengths, including the long-term, multisite prospective design following a community sample from childhood to adulthood, availability of data from self- and peer reports as well as school and court records, and analyses controlling for potential confounds that could attenuate relations between early abuse and adult outcomes. The study's key limitation is one that cannot ethically be overcome: reliance on correlational rather than experimental data because of the impossibility of random assignment to abused and nonabused groups. In addition, we were not able to control for genetic factors, and although other forms of child maltreatment are correlated with physical abuse, only physical abuse was assessed in the current study, warranting future research to control for genetic factors and examine adult outcomes associated with other forms of maltreatment. Nevertheless, the study provides strong evidence that the risk of negative outcomes in adulthood is more than twice as likely for adults who were physically abused early in childhood compared with those who were not with respect to education and economic stability, physical and mental health problems, and self- and peer-reported criminal behavior, making prevention of abuse and intervention for children who have

been abused a pressing public health priority.

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ABBREVIATIONS

CDP: Child Development Project
CPS: Child Protective Services
DSM: *Diagnostic and Statistical Manual of Mental Disorders*
FT: Fast Track
SES: socioeconomic status

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