



HHS Public Access

Author manuscript

Child Abuse Negl. Author manuscript; available in PMC 2016 August 01.

Published in final edited form as:

Child Abuse Negl. 2015 August ; 46: 132–141. doi:10.1016/j.chiabu.2015.01.013.

The Association between Childhood Maltreatment Experiences and the Onset of Maltreatment Perpetration in Young Adulthood Controlling for Proximal and Distal Risk Factors

Vered Ben-David, PhD [Research Assistant Professor],

Brown School of Social Work, Washington University in St. Louis, Campus Box 1196, One Brookings Drive, St. Louis, MO 63130, USA.

Melissa Jonson-Reid, PhD [Professor],

Brown School of Social Work, Washington University in St. Louis, Campus Box 1196, One Brookings Drive, St. Louis, MO 63130, USA. jonsonrd@wustl.edu

Brett Drake, PhD [Professor], and

Brown School of Social Work, Washington University in St. Louis, Campus Box 1196, One Brookings Drive, St. Louis, MO 63130, USA. brett@wustl.edu

Patricia L. Kohl, PhD [Associate Professor]

Brown School of Social Work, Washington University in St. Louis, Campus Box 1196, One Brookings Drive, St. Louis, MO 63130, USA. pkohl@wustl.edu

Abstract

The evidence for association between child maltreatment victimization and later maltreatment perpetration is both scant and mixed. The objective of the present study was to assess the association between childhood maltreatment experiences and later perpetration of maltreatment in young adulthood controlling for proximal young adult functioning, prior youth risk behaviors, and childhood poverty.

The study included 6935 low-income children with (n=4470) or without (n=2465) maltreatment reports prior to age 18 followed from ages 1.5 through 11 years through early adulthood (ages 18-26). Administrative data from multiple regional and statewide agencies captured reports of maltreatment, family poverty and characteristics, system contact for health, behavioral risks and mental health in adolescence, and concurrent adult functioning (crime, mental health and poverty). After controlling for proximal adult functioning, repeated instances of neglect or mixed type maltreatment remained associated with young adult perpetration. Females and subjects with adolescent history of runaway, violent behaviors or non-violent delinquency also had higher risk. Greater caregiver education remained associated with reduced risk. The study concludes that prevention of recurrent neglect and mixed forms of maltreatment may reduce risk of maltreatment

Corresponding Author: vered_bd@hotmail.com; v david@brownschool.wustl.edu **Phone number:** 314-736-0423.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

for future generations. Intervening to increase parental education and decrease adolescent risk behaviors may offer additional benefit.

Keywords

Child maltreatment; Intergenerational continuity; Cycle of maltreatment; Adolescent maltreatment

Introduction

Child maltreatment is a public health concern with numerous untoward outcomes prior to adulthood (e.g., Fang, Brown, Florence & Mercy, 2012; Gilbert et al., 2009; Kohl, Jonson-Reid, & Drake, 2009), during adulthood (Jonson-Reid, Kohl, & Drake, 2012; Widom, Czaja, & Dutton, 2008) and potentially extending into future generations (e.g., Berlin, Appleyard, & Dodge, 2011; Thompson, 2006; Thornberry, Knight, & Lovegrove, 2012). The evidence from prospective studies linking child maltreatment victimization to later maltreatment perpetration is both scant and mixed. Several studies found that being abused or neglected in childhood increases the likelihood of perpetrating child maltreatment later as a parent (e.g., Belsky, 1993; Dixon, Browne & Hamilton-Giachritsis, 2005; Egeland, Bosquet, & Chung, 2002; Ertem, Leventhal, & Dobbs, 2000; Kaufman & Zigler, 1987; McCloskey & Bailey, 2000; Newcomb & Locke, 2001; Pears & Capaldi, 2001; Thompson, 2006; Thornberry & Henry, 2013), while other studies found only limited (Berlin et al., 2011; Renner & Slack, 2006; Sidebotham, Golding, & the ALSPAC Study Team, 2001) or no support (Altemeier, O'Connor, Sherrod, Tucker, & Vietze, 1986; Widom 1989).

Some of these inconsistencies may be attributable to differences in samples, comparison groups, and measurement of maltreatment in both generations (Thornberry et al., 2012). For example, Renner and Slack (2006) used self-report for parents' history but official reports for the subsequent generation; this is the only study that acknowledged the need to include unsubstantiated reports in measuring maltreatment when using official records. Thornberry and Henry (2013) used substantiated reports only to measure maltreatment in both generations; and Widom (1989) used substantiated reports for childhood history but adult arrest for maltreatment for subsequent perpetration.

The magnitude and/or sustained impact of childhood maltreatment on later maltreatment of children separate from other risk factors is not clear. Most of the literature on onset of maltreatment perpetration has focused on factors like comorbid psychopathology, early childbearing, disciplinary practices, and income during adulthood (Dixon et al., 2005; Pears & Capaldi, 2001; Thompson, 2006). Two studies found that adult concurrent risk factors partially mediated or moderated the link with prior maltreatment (Dixon et al., 2005; Pears & Capaldi, 2001), while others reported no effect of prior maltreatment once proximal factors were controlled (Sidebotham et al., 2001; Thompson, 2006). The intervening or sustained role of other childhood risk factors is less clear. For example, poverty (Drake & Jonson-Reid, 2014) and caregiver substance use (Herrenkohl & Herrenkohl, 2007; Young, Boles, & Otero, 2007) have been found to be associated with maltreatment, but it is unclear whether these factors originated in adulthood or had onset earlier. One study found that

chronic reports of maltreatment were associated with greater risk of separate outcomes of adult mental health treatment, criminal behavior, or adult perpetration of maltreatment after adjusting for violence, injury and mental health issues during adolescence. This study, however, did not control for continuity of poverty, potential role of maltreatment type, nor the potential association between the adult risk factors (Jonson-Reid et al., 2012).

Conceptual Framework

According to a *cycle of violence* perspective, abuse (as compared to neglect) leads to abuse perpetration (Smith, Cross, Winkler, Jovanovic, & Bradley, 2014; Widom, 1989a; 1989b). Theoretically, exposure to abusive parents increases the risk that the victim will learn that such behaviors are acceptable and effective, incorporating them into their own parenting styles as adults (Thornberry & Henry, 2013). In contrast, trauma and stress theories would assert that it is not the behavior learned, but rather the powerful or continued experiences like maltreatment (trauma) or persistent psychological distress associated with material hardship (stress) (Mistry, Vanderwater, Huston, & McLoyd, 2002) that put an individual at increased risk for later perpetration. Hypothetically either trauma or stress may lead to a type of psychopathology in adulthood (Binder et al., 2008; Bradley et al., 2008) which increases the risk of later perpetration. Another possibility is that the intermediate effects of maltreatment on transition to adulthood impacts likelihood of perpetration. Neglect has tended to be most powerfully associated with poverty (Slack, Holl, McDaniel, Yoo, & Bolger, 2004; Slack et al., 2011) and is also strongly associated with adolescent risk behaviors such as delinquency or educational failure (Chapple & Vaske, 2010; Nikulina, Widom, & Czaja, 2011). If neglect strongly predicts adult perpetration this may be due to its impact on one's achievement of economic stability in young adulthood. In other words, neglect leads to increased likelihood of second generation poverty which in turn is a risk factor for maltreatment.

The Present Study

This study helps fill the gap in our understanding of the link between childhood maltreatment and onset of maltreating behaviors among young adults by controlling for both childhood factors and concurrent problems in adulthood. The research questions are:

- (1) Within a low income sample, is there an association between maltreatment experience and later onset of maltreatment perpetration in young adulthood? If children with prior physical or sexual abuse are more likely to become perpetrators than non-maltreated or neglect only cases, a trauma or 'cycle of violence' theory might best guide intervention. If neglect is more strongly associated with perpetration compared to poverty only or abuse, a chronic stress theory or economic impact of neglect framework may be more useful.
- (2) Does such an association hold once proximal risks in adulthood, distal adolescent risk behaviors, and family characteristics are controlled? Because no study has adequately incorporated both concurrent adult and lifetime childhood risks, no hypothesis is offered.

Method

Sample

Data are drawn from a large longitudinal administrative data study of low income children reported for maltreatment and matched comparison children. At the time of sampling (1993–1994), children were age 11 or younger, lived in a large Midwestern metropolitan area, and lived in families receiving Aid to Families with Dependent Children (AFDC). Children with official reports of child abuse and neglect (CAN) were linked to AFDC to form a CAN/AFDC group. One child per family was randomly selected and matched to comparison children from the larger population of AFDC families with no family or child history of maltreatment according to age and area of residence (AFDC-only). Subjects were followed through the September of 2009 in maltreatment records, but datasets with exact dates were also available prior to the sampling frame including birth, AFDC, Medicaid and parental criminal records. Exact dates in these data systems allowed for temporal ordering of independent and dependent variables and prospective analyses.

To focus on adult perpetration, the present sample was limited to those who were over the age of 17 in January of 2009 allowing all subjects at least 9 months of risk as an adult. Subjects ranged in age from 18 to 27 years at the end of the study. Other exclusions included death prior to age 18 or incarceration for the entire adult risk period, leaving a sample of 6989. Most states restrict maltreatment investigation to related caregivers, so subjects who had later allegations as perpetrators and were not parents or paramours or had missing data from the relationship code were also excluded (n=53). Because this was a naturalistic observation of children through administrative records, it was possible for children in the AFDC-only group to later have reports of maltreatment after the sampling period. These cases (n=983) were compared to the original maltreatment group with no significant differences found. These were collapsed with the maltreatment group. The final sample include subjects reported for maltreatment at least once prior to age 18 (n=4,470) and a second group never reported (n=2,465).

Data

Study data included tract-level 1990 US census information, statewide birth and death records, statewide child welfare data (including maltreatment reports, specific subtypes of maltreatment, substantiation status and relationship to perpetrator); mental health billing from statewide Department of Mental Health (caregiver and child), Medicaid data including health hospitalization and inpatient and outpatient mental health treatment (parent and child), expanded statewide health coverage (child only), emergency department records, income maintenance (AFDC and later Temporary Aid to Needy Families), statewide corrections and highway patrol records, and regional juvenile court, runaway shelters and special education eligibility records. Parent and child demographic information were obtained from birth records, child welfare and income maintenance data.

Codebooks and data entry procedures were collected from each agency and used along with available literature and discussions with agency representatives to guide cleaning and recoding. Preliminary analyses were shared with each agency to further check on proper

understanding of the meaning of variables. Most datasets were linked using a common state level identifier. The remaining data sets were linked using a composite name/birthdate/gender match variable. Resulting matches were checked across data sets over time. Address information from AFDC and child welfare were geocoded using Arcview and assigned census tracts to link to US census information. All identifying information was then removed before analysis. Procedures involving data collection and management were approved by the Human Research Protection Office of XXXX (omitted for blind review) and each agency contributing data.

Variables

Dependent variable—The dependent variable is alleged perpetration of maltreatment by the study subjects, indicated by a report (substantiated or unsubstantiated) of child abuse or neglect in which the perpetrator was a listed as a parent or paramour.

Independent variable—The independent variable is subject's history of childhood maltreatment, indicated by any investigated report of child abuse or neglect (CAN) prior to age 17. Investigated reports in this study include those that reach the legal standard for investigation and were not deemed “inappropriate.” We include both unsubstantiated and substantiated reports because of the significant body of research evidence from different states, countries, and data sources that suggests a lack of practically important difference between substantiated and unsubstantiated cases in relation to recidivism (Drake, Jonson-Reid, Way & Chung, 2003; English et al, 1999; Kohl, Jonson-Reid, & Drake, 2009), risk factors noted in cases (Fallon, Trocme, & MacLaurin, 2011), and many developmental outcomes (Hussey et al., 2005; Jonson-Reid et al, 2004; Leiter, Myers, & Zingraff, 1994). Studies that use official reports but are limited to measuring substantiated cases, may be including unsubstantiated cases in the comparison group and this in turn may confound findings. Up to five different maltreatment subtypes (e.g., burns, lack of supervision, fondling, etc.) could be listed for a single report. These were recoded into major categories of neglect, physical, sexual or multiple types. Sexual abuse reports and physical abuse reports that remained within type over time were rare. As there was no significant difference between sexual and physical abuse related to later perpetration, sexual and physical were collapsed into a single category. Subjects could have between 1 and 24 reports of CAN over time. Because of the prior work on chronicity, maltreatment type was further divided by single event or continued reports over time.

Control Variables

Demographic and family of origin variables—included child gender and race (recoded as ‘White’ v ‘Non-white’ because the demographics of the region at the time). Family variables included caregiver history of foster care as youth, caregiver's high school graduation, history of mental health treatment, and criminal history at study start. Census tract poverty and education variables were also available. All subjects in the present sample lived in families receiving income maintenance at least once prior to age 12. Continued (into adolescence) versus childhood only (prior to age 12) poverty was measured by income maintenance and/or health care paid for by government aid during adolescence.

Adolescent behavioral indicators—These variables included a history of runaway, drug treatment or arrest for drugs, arrest or petition or emergency room care for violent behavior, other non-violent delinquency petition, treatment for mental health diagnosis according to ICD-9 codes, special education(including emotional disturbance), or record of STD treatment prior to age 18. Mental health data were drawn from emergency room, state mental health department records, and child publicly funded health care records. Emotional disturbance was combined with specialty mental health. Unfortunately, many youth with serious mental health needs may be recognized in the school system under the IDEA category of “emotional disturbance” but never receive adequate diagnosis and care in specialty mental health (e.g., Center for Effective Collaboration and Practice, 2001; Lee & Jonson-Reid, 2009). It is not possible to further break down emotional disturbance into specific disorders, nor is it possible to know whether or not a child served in pediatrics or education or specialty mental health is diagnosed and served appropriately (Koppelman, 2004). We have therefore conceptualized this variable as an overall indicator of emotional or behavioral health problems rather than attempt to analyze by disorder.

Adult concurrent risks—Poverty in young adulthood was measured by either an income maintenance record or health care record with payment as ‘indigent’ or government aid. Mental health in adulthood was measured as record of emergency room treatment or care provided under the Missouri Department of Mental Health system with an ICD-9 diagnosis of a mental health disorder. Prior research is inclusive about the relation of specific types of disorders to maltreatment perpetration (Kohl, Jonson-Reid, Drake, 2011). While a Canadian study found a stronger association with anti-social personality disorder and physical maltreatment, any presence of a mental health diagnosis was associated with a higher risk of maltreatment perpetration compared to parents with no known disorders (Walsh, MacMillan, Jamieson, 2002). Further, neglect has been strongly associated with depression (Lee, Taylor & Bellamy, 2012). Consistent with the adolescent risk behaviors and given concerns about sample size for certain disorders, mental health was categorized as yes or no. Adult crime was measured as any arrest record age 18 or later from Highway Patrol records. Similar to mental health, we elected not to disaggregate arrest by type of crime as in this case it is serving as an additional proxy for concurrent adult functioning problems rather than a particular set of behaviors.

Analysis

All analyses were done in SAS Version 9.3. Descriptive analyses included χ^2 and bivariate survival analyses. Survival analyses allow for the control of differing times at risk (Allison, 2010). In this analysis, all subjects had to legal adults as of January 2009, but because of age differences some spent less time as adults prior to the end of the study than others. Time at risk was programmed from the age a subject turned 18 to the end of the data collection for adult maltreatment (September of 2009). Subjects who died in adulthood were censored out at time of death if this occurred prior to any perpetration or the end of the study. Bivariate survival analyses were used both to examine key variables for multivariate analyses and to help assess for proportionality issues. Proportionality was also assessed through residual analysis. An interaction term between a variable and time was created if needed to adjust for nonproportionality in the multivariate model and retained based on significance and impact

on model fit (Allison, 2010). For multivariate analyses, Cox regression models were constructed using the SURVEYPHREG option to control for clustering by census tract. Terms which were significant or non-significant but impacted the overall model fit, were retained in the final model. Variables were entered in hierarchical fashion to be able to track the change in relationship between maltreatment and later perpetration as child and family characteristics, record of adolescent health or behavioral problems, and adult functioning were added. No significant interactions outside of time remained in the model, but even with a large sample, the relative rarity of certain values of variables and the outcome of interest warrants caution. Finally, sample size did not permit exploring perpetration by type in a multivariate context, so only a descriptive association with prior maltreatment is provided.

Results

Among youth with prior histories of maltreatment reports, the overall rate of alleged perpetration was 4.99% (n=223) compared to 1.95% (n=48) for subjects with no childhood report of maltreatment. Bivariate survival analyses comparing subjects who became alleged perpetrators to those never reported can be found in Table 1. All types of maltreatment reports were significantly associated with later perpetration, but those subjects who had 2 or more reports of neglect or multi-types had much higher rates of maltreatment perpetration over time (6% and 6.2% of perpetration rates, respectively). Females had higher rates of later reports compared to males (5.56% vs. 2.24% respectively), but there was no difference found by race or living in a high poverty neighborhood during childhood.

Several family characteristics were significant. Children who lived in families without indicators of poverty in adolescence were much less likely to be among later perpetrators than those with continued indication of family poverty (0.09 vs. 4.5 respectively). Subjects whose caregivers graduated from high school at baseline were less likely to be among those later reported (2.9% vs. 5.1% respectively). Subjects whose caregivers had history of mental health treatment or spent time in foster care during adolescence had higher likelihood of being among the alleged perpetrators (see Table 1).

Subjects with a record of treatment for a mental health ICD-9 diagnosis prior to age 18 or special education for emotional disturbance were more frequently among those later reported as perpetrators (5.7% vs. 2.9%), but special education for other types of educational disabilities was not significant. Subjects with histories of medical treatment for a sexually transmitted disease had higher rates of later adult perpetration (6.6% vs. 3.8%). Subjects with a history of violent offense had more than twice the rates of later perpetration (6.8% vs. 3.2%). Subjects with history of runaway behavior as documented by the juvenile court, child welfare or regional runaway shelters were more than 3 times more likely to be among the later adult perpetrators (12.7% vs. 3.4%). Subjects with a history of juvenile court petition for a drug offense or medical record of treatment for substance use had higher rate of later perpetration (5.5% vs. 3.8%). All three indicators of problems in adult functioning were significant, though indicator of poverty and Adult mental health care had stronger associations with the outcome of interest.

Multivariate model of young adult onset of child maltreatment perpetration

A series of Cox regressions (reporting Wald chi-square statistic for model fit in Table 2) were constructed controlling for clustering at the census tract although none of the census tract level variables were not significant. Four models were run, beginning with maltreatment history ,next adding child and family characteristics, then including the adolescent behavioral and health treatment variables, and finally including adult functioning variables.

While most types of maltreatment regardless of recurrence were significant in Model 1, only subjects with multiple reports of neglect or mixed types had very large risk ratios (over 3 times the risk of poverty only) and remained significant across all models. Females were over two times more likely to be among the alleged perpetrators across models. Subjects in families that had both indicators of family poverty during adolescence and childhood had higher risk of perpetration in models 2 and 3, but the effect became small and non-significant once adult functioning was controlled. Having a caregiver who graduated from highschool during the subject's childhood continued to reduce risk of later perpetration across models. We examined a possible link between poverty desistence and education (not shown). While highschool graduation status was associated with a somewhat lower likelihood of continued poverty in adolescence the difference was less than 10% and the interaction was not significant. Subjects with parents who had histories of foster care were twice as likely to be among alleged perpetrators but the small cell size led to a broad confidence interval so caution in interpretation is warranted.

When adult functioning variables were added, adolescent record of runaway and delinquency remained significant but indicators of adolescent mental health or drug treatment did not. The indicator of poverty in young adulthood and runaway shelter use of record of runaway from court records had the strongest association with young adult perpetration, both with hazard ratios over three. The interaction term with time, however, indicated that after age 17 the import of runaway history decreases by about 2% per year.

Regardless of the types of maltreatment experienced as a child, the most common type of maltreatment perpetrated in young adulthood was neglect (61%). Another 33% of perpetrators with histories of child maltreatment allegedly committed physical or mixed type abuse. Among subjects without a history of maltreatment, neglect was also the most common form of alleged perpetration (67%). Although the rate of sexual abuse perpetration was relatively low, the subjects were also still young and likely to have younger children.

Discussion

Once family, adolescent risk factors, and current adult functioning were controlled, repeated reports for neglect or mixed forms of maltreatment (often including neglect) remained significantly associated with onset of perpetration in young adulthood. While indication of violent behavior in adolescence also remained a significant predictor of later perpetration, the association was stronger between perpetration and runaway behavior. Of the adult functioning variables measured, the strongest effect was for current indication of poverty.

Our findings only partially support the overall idea that parents who were abused in childhood are at increased risk for abusing their own children (Berlin et al., 2011; Egeland et al., 2002; Kaufman & Zigler, 1989; Smith et al., 2014). Instead, the present findings support the idea that it is sustained exposure to maltreatment, particularly neglect, that is most critical. While it was not possible to control for whether neglected children experienced other types of trauma like intimate partner violence, findings are more consistent with a chronic stress explanation than a learned behavior or traumatic response framework.

While continued indication of poverty in adulthood was a risk factor, ongoing neglect remained significant while childhood poverty became non-significant in the final model. Neglect and poverty are heavily associated (see Drake & Jonson-Reid, 2014; Pelton, 2014), there is a substantial literature and regulations guiding definitions in policy that suggest that they are not the same construct. Prior analyses indicate significant differences between children who have similar socioeconomic status but are maltreated compared to those who are not (e.g., Jonson-Reid et al, 2009; Putnam-Hornstein et al, 2011). Nikulina, Widom and Czaja (2011) found unique impacts of child neglect and child poverty on adult arrest, PTSD. Evans and Burton (2013) found strong effects for physical neglect and juvenile offending. Our study adds to the growing literature calling for much greater attention to child neglect prevention and intervention (Proctor & Dubowitz, 2014).

Strengths and Limitations

Strengths of the study include its longitudinal nature, the range of data sources, and the consistency of reliance on official investigated report of maltreatment for both childhood victimization and later perpetration. Although there was a non-maltreated comparison group, it is impossible to firmly establish a causal relationship without random assignment.

Official reports likely underestimate the actual occurrence of maltreatment (Sedlak et al., 2010). On the other hand, if there was a large enough group of maltreated children in the comparison group, this should have made it more difficult to find differences. It is likely that the repeated collection of maltreatment report data over time helped mitigate this problem. Similarly, the current data did not capture other forms of childhood violence exposure such as intimate partner violence. Indeed, significant research exists to suggest that maltreatment is often comorbid with rather than separate from these other exposures (Finkelhor, Turner, Ormrod, & Hamby, 2009). If a significant proportion of the non-maltreated group had experienced other forms of violence, assuming they were equal in later risk, this should have reduced the ability to find differences.

The current sample was limited to a Midwestern metropolitan population receiving public assistance at study onset. Significant research indicates that poor families comprise the majority of families served by child welfare (Berns, Briar-Lawson, & Kim, 2013) and that poverty is heavily associated with maltreatment itself (Sedlak et al., 2010). While controlling for poverty during childhood, adolescence and adulthood was a strength, we recognize that public assistance and neighborhood poverty are course measures (see Slack et al, 2004). As mentioned earlier, however, the impact of maltreatment separate from poverty is consistent with other research. The limitation in region prevents us from understanding

how findings might differ across states with varying definitions of maltreatment, rurality, or among racial groups not captured in the present sample. Clearly, replication is warranted.

Finally, while the analytic techniques used control for time at risk for the subject, this study is only able to capture young adult onset. Many individuals may not yet have become parents or paramours. It is also possible that risk of maltreatment may change as additional children are born or other factors in the family change (MacKenzie, Kotch, Lee, Augsberger, & Hutto, 2011). It is possible that relationships between maltreatment history and later perpetration change for those with later onset. However, the high prevalence of neglect among the allegations of perpetration is consistent with national data (U.S. Department of Health and Human Services, 2012).

Females may be much more likely to be single caretakers or primary caretakers of children, which may explain the greater risk for females in the present study. This is consistent with the most common gender of perpetrator in national data (U.S. Department of Health and Human Services, 2012). Because most states require that an alleged perpetrator have “care, custody, and control” (Children's Bureau, nd), reported maltreatment may overestimate the role females play in child abuse and neglect.

Conclusions

Our findings highlight the importance of considering neglect as a significant risk for long term outcomes (Nikulina et al., 2011). Given that neglect comprises the largest proportion of official reports and estimates of incidence of child maltreatment (Sedlak et al., 2010; U.S. Department of Health and Human Services, 2012) and is heavily associated with recurrence (Jonson-Reid, Chung, Way, & Jolley, 2010), preventing neglect seems an obvious focus for prevention of maltreatment in subsequent generations.

Our findings are also consistent with research suggesting chronic maltreatment often leads to worse outcomes (Jonson-Reid et al., 2012). Chronic stress has been found to disrupt development of emotional systems (Juster et al., 2011). Some research suggests that ameliorating such negative effects associated with childhood maltreatment may help reduce child abuse risk for the subsequent generation (Smith et al., 2014). As mentioned earlier, neglect may also co-occur with other forms of trauma, increasing risk of PTSD and then later perpetration (Berzenski, Yates, & Egeland, 2014). Providing access to evidence-based practices like trauma-focused cognitive-behavioral therapy, may both alleviate PTSD symptoms (Chaffin & Friedrich, 2004; Cohen & Mannarino, 1997; Cohen, Mannarino & Deblinger, 2006; Shipman & Taussing, 2009) and have longer term preventive benefits related to perpetration.

There are several indicators of the importance of poverty or factors related to poverty (e.g., caregiver completion of high school) in maltreatment onset. While consistent with prior work (Drake & Jonson-Reid, 2014; Slack et al., 2004; 2011), present findings indicate several potential forms of intervention. For example, while some research indicates that provision of or connection to material supports are among the most highly valued components of child welfare intervention (Courtney, Dworsky, Piliavin, & Zinn, 2005; Loman & Siegel, 2012), we do not know if direct material support may lower

intergenerational risk. There has been recent interest in and emerging research on two-generation education programs to alleviate poverty (Shonkoff & Fisher, 2013). It is not known if such approaches may have additional benefits relative to maltreatment. Second, concurrent poverty in young adulthood was a strong predictor of perpetration. Improving the educational success and job preparation of maltreated children may have added benefits as they become caregivers themselves.

Delinquency and runaway behaviors remained significant risks in the final model. While prevention of such problems should be another focus, when these behaviors do manifest it may provide for an opportunity for intervention. Since resource and policy constraints mean that few children reported for maltreatment receive any significant services following a report (Jonson-Reid, 2011), a second signal of poor functioning may provide a chance to rectify an initial missed opportunity. This suggests the importance of screening for prior maltreatment when youth contact these systems and investing in empirically based secondary prevention programs.

Similar to previous studies, our study indicates that most of the individuals who suffered abuse and neglect in childhood do not become maltreatment perpetrators (e.g., Berlin et al., 2011; Thornberry & Henry, 2013). Of course, it should also be remembered that this is not the same as being resilient across domains of functioning (Topitzes, Mersky, Dezen, & Reynolds, 2013). Further, our subjects are early in the family formation years. This study, however, indicates several potential intervention targets over time that hold promise to prevent onset of perpetration among vulnerable populations: primary prevention of maltreatment, prevention of recurrence, family-based economic intervention, and effective intervention with victims of maltreatment to support a successful transition to young adulthood. While each represents a cost, the cost to society and individuals of not intervening seems even higher.

Acknowledgments

We wish to thank Lu Han who assisted with early data management and cleaning in the prior grant. The author(s) disclosed receipt of the following financial support for the data collection and management that led to the ability to complete the present analysis and publication: This research was supported by funding through the Child Neglect: Service Paths and Young Adults Outcomes grant # RO1MH061733-04A1 from the National Institute of Mental Health and Young Adult Violence: Modifiable Predictors and Paths # CE001190 from the Centers for Disease Control and Prevention. Opinions expressed here do not necessarily reflect those of the funding agencies.

References

- Allison, P. *Survival analysis using SAS: A practical guide*. Second ed.. SAS Press; Cary, North Carolina: 2010. ISBN 978-1-59994-640-5
- Altmeier WA, O'Connor S, Sherrod KB, Tucker D, Vietze P. Outcome of abuse during childhood among pregnant low income women. *Child Abuse & Neglect*. 1986; 10:319–330. [PubMed: 3742277]
- Belsky J. Etiology of child maltreatment: A developmental-ecological analysis. *Psychological Bulletin*. 1993; 114:413–434. [PubMed: 8272464]
- Berlin LJ, Appleyard K, Dodge KA. Intergenerational continuity in child maltreatment: Mediating mechanisms and implications for prevention. *Child Development*. 2011; 82:162–176. [PubMed: 21291435]

- Berns, D.; Briar-Lawson, K.; Kim, WH. Addressing poverty as a child welfare strategy.. In: Briar-Lawson, K.; McCarthy, M.; Dickinson, N., editors. *Children's Bureau: Shaping a century of Child Welfare Practices, Programs and Policies*. NASW Press; 2013. p. 43-59.
- Berzenski, SR.; Yates, TM.; Egeland, B. A multidimensional view of continuity in intergenerational transmission of child maltreatment.. In: Korbin, J.; Krugman, R., editors. *Handbook of Child Maltreatment*. Springer; 2014. p. 115-129.
- Binder EB, Bradley R, Liu W, Epstein MP, Deveau T, Mercer KB, Ressler KJ. Association of FKBP5 polymorphisms and childhood abuse with risk of posttraumatic stress disorder symptoms in adults. *JAMA*. 2008; 299(11):1291–1305. [PubMed: 18349090]
- Bradley RG, Binder EB, Epstein MP, Tang Y, Nair HP, Liu W, Newport DJ. Influence of child abuse on adult depression: moderation by the corticotropin-releasing hormone receptor gene. *Archives of General Psychiatry*. 2008; 65(2):190–200. [PubMed: 18250257]
- Brown J, Cohen P, Johnson JG, Salzinger S. A longitudinal analysis of risk factors for child maltreatment: Findings of a 17-year prospective study of officially recorded and self-reported child abuse and neglect. *Child Abuse & Neglect*. 1998; 22(11):1065–1078. [PubMed: 9827312]
- Center for Effective Collaboration and Practice. [Dec 2014] Students with emotional disturbance. 2001. <http://cecp.air.org/resources/20th/intro.asp>
- Chaffin M, Friedrich B. Evidence-based treatments in child abuse and neglect. *Children & Youth Services Review*. 2004; 26:1094–1113.
- Chapple CL, Vaske J. Child neglect, social context, and educational outcomes: examining the moderating effects of school and neighborhood context. *Violence & Victims*. 2010; 25(4):470–485. [PubMed: 20712146]
- Children's Bureau, Administration Children and Families, US DHHS. [December 2014] State Statutes. Child Welfare Information Gateway. <https://www.childwelfare.gov/topics/systemwide/laws-policies/state/>
- Cohen JA, Mannarino AP. A treatment study of sexually abused preschool children: Outcome during a one year follow-up. *Journal of the Academy of Child & Adolescent Psychiatry*. 1997; 36:1228–1235.
- Cohen, JA.; Mannarino, AP.; Deblinger, E. *Treating trauma and traumatic grief in children and adolescents*. Guilford Press; New York: 2006.
- Courtney ME, Dworsky E, Piliavin A, Zinn I. Involvement of TANF applicant families with child welfare services. *Social Service Review*. 2005; 79(1):119–157.
- Dixon L, Browne K, Hamilton-Giachritsis C. Risk factors of parents abused as children: A mediational analysis of the intergenerational continuity of child maltreatment (part I). *Journal of Child Psychology & Psychiatry*. 2005; 46:47–57. [PubMed: 15660643]
- Drake, B.; Jonson-Reid, M. Poverty and child maltreatment.. In: Korbin, J.; Krugman, R., editors. *Handbook of child maltreatment*. Springer; 2014. p. 131-148.
- Drake B, Jonson-Reid M, Way I, Chung S. Substantiation and recidivism. *Child Maltreatment*. 2003; 8:248–260. [PubMed: 14604173]
- Egeland, B.; Bosquet, M.; Chung, AL. Continuities and discontinuities in the intergenerational transmission of child maltreatment: Implications for breaking the cycle of abuse.. In: Browne, KD.; Hanks, H.; Stratton, P.; Hamilton, CE., editors. *Early prediction and prevention of child abuse: A handbook*. Wiley; Chichester: 2002. p. 217-232.
- English D, Marshall D, Brummel S, Orme M. Characteristics of Repeated Referrals to Child Protective Services in Washington State. *Child Maltreatment*. 1999; 4(4):297–307.
- Ertem IO, Leventhal JM, Dobbs S. Intergenerational continuity of child physical abuse: How good is the evidence? *Lancet*. 2000; 356:814–819. [PubMed: 11022929]
- Evans CB, Burton DL. Five types of child maltreatment and subsequent delinquency: Physical neglect as the most significant predictor. *Journal of Child & Adolescent Trauma*. 2013; 6(4):231–245.
- Fallon B, Trocme N, MacLaurin B. Should child protection services respond differently to maltreatment, risk of maltreatment, and risk of harm?. *Child abuse & neglect*. 2011; 35(4):236–239. [PubMed: 21481930]

- Fang X, Brown DS, Florence CS, Mercy JA. The economic burden of child maltreatment in the United States and implications for prevention. *Child Abuse & Neglect*. 2012; 36(2):156–165. [PubMed: 22300910]
- Finkelhor D, Turner HA, Ormrod R, Hamby SL. Violence, abuse, and crime exposure in a national sample of children and youth. *Pediatrics*. 2009; 124(5):1–13. [PubMed: 19564276]
- Gilbert R, Widom CS, Browne K, Fergusson D, Webb E, Janson S. Burden and consequences of child maltreatment in high-income countries. *Lancet*. 2009; 373(9657):68–81. [PubMed: 19056114]
- Herrenkohl T, Herrenkohl R. Examining the overlap and prediction of multiple forms of child maltreatment, stressors, and socioeconomic status: A longitudinal analysis of youth outcomes. *Journal of Family Violence*. 2007; 22:553–562.
- Hussey J, Marshal J, English D, Knight E, Lau A, Dubowitz H, Kotch BJ. Defining maltreatment according to substantiation: Distinction without a difference? *Child Abuse & Neglect*. 2005; 29:479–492. [PubMed: 15970321]
- Jonson-Reid M. Disentangling system contact and services: A key pathway to evidence-based children's policy. *Child & Youth Service Review*. 2011; 33(5):598–604.
- Jonson-Reid M, Drake B, Kim J, Porterfield S, Han L. A Prospective analysis of the relationship between reported child maltreatment and special education eligibility among poor children. *Child Maltreatment*. 2004; 9:382–394. [PubMed: 15538037]
- Jonson-Reid M, Kohl P, Drake B. Child and adult outcomes of chronic child maltreatment. *Pediatrics*. 2012; 129(5):839–846. [PubMed: 22529281]
- Juster RP, Bizik G, Picard M, Arseneault-Lapierre G, Sindi S, Trepanier L, Lupien SJ. A transdisciplinary perspective of chronic stress in relation to psychopathology throughout life span development. *Developmental Psychopathology*. 2011; 23(03):725–776.
- Kaufman, J.; Zigler, E. The intergenerational transmission of child abuse.. In: Cicchetti, D.; Carlson, V., editors. *Child maltreatment: Theory and research on the causes and consequences of child abuse and neglect*. Cambridge University Press; Cambridge, UK: 1989. p. 129-150.
- Kohl PL, Jonson-Reid M, Drake B. Time to leave substantiation behind: Findings from a national probability study. *Child Maltreatment*. 2009; 14:17–26. [PubMed: 18971346]
- Kohl P, Jonson-Reid M, Drake B. The role of parental mental illness in the safety and stability of maltreated children. *Child Abuse & Neglect*. 2011; 35(5):309–18. [PubMed: 21620157]
- Koppelman, J. [December 2014] Children with mental disorders: making sense of their needs and the systems that help them. *National Health Policy Forum* (no 799). 2004. http://www.nhpf.org/library/issue-briefs/IB799_ChildMentalHealth.pdf
- Lee SJ, Taylor C, Bellamy J. Paternal depression and risk for child neglect in father-involved families of young children. *Child Abuse & Neglect*. 2012; 36(5):461–469. [PubMed: 22633873]
- Lee M, Jonson-Reid M. Special Education services for emotional disturbance: Needs and outcomes for children involved with the child welfare system. *Children & Youth Services Review*. 2009; 31:722–731. [PubMed: 19714226]
- Leiter J, Myers KA, Zingraff MT. Substantiated and unsubstantiated cases of child maltreatment: Do their consequences differ? *Social Work Research*. 1994; 18(2):67–82.
- Loman A, Siegel G. Effects of anti-poverty services under the differential response approach to child welfare. *Children & Youth Service Review*. 2012; 34(9):1659–1666.
- MacKenzie MJ, Kotch JB, Lee LC, Augsberger A, Hutto N. A cumulative ecological–transactional risk model of child maltreatment and behavioral outcomes: Reconceptualizing early maltreatment report as risk factor. *Children & Youth Services Review*. 2011; 33(11):2392–2398.
- McCloskey LA, Bailey JA. The intergenerational transmission of risk for child sexual abuse. *Journal of Interpersonal Violence*. 2000; 15:1019–1035.
- Mistry RS, Vanderwater EA, Huston AC, McLoyd VC. Economic well-being and children's social adjustment: The role of family process in an ethnically diverse low-income sample. *Child Development*. 2002; 73(3):935–951. [PubMed: 12038561]
- Newcomb MD, Locke TF. Intergenerational cycle of maltreatment: A popular concept obscured by methodological limitations. *Child Abuse & Neglect*. 2001; 25:1219–1240. [PubMed: 11700694]

- Nikulina V, Widom C, Czaja S. The role of childhood neglect and childhood poverty in predicting mental health, academic achievement and crime in adulthood. *American Journal of Community Psychology*. 2011; 48(3-4):309–321. [PubMed: 21116706]
- Pears KC, Capaldi DM. Intergenerational transmission of abuse: A twogenerational prospective study of an at-risk sample. *Child Abuse & Neglect*. 2001; 25:1439–1461. [PubMed: 11766010]
- Pelton, LH. The continuing role of material factors in child maltreatment and placement.. *Child Abuse & Neglect*. 2014. <http://dx.doi.org/10.1016/j.chiabu.2014.08.001>
- Proctor, LJ.; Dubowitz, H. *Handbook of Child Maltreatment*. Springer Netherlands; 2014. *Child Neglect: Challenges and Controversies.*; p. 27-61.
- Putnam-Hornstein E. Report of maltreatment as a risk factor for injury death: A prospective birth cohort study. *Child Maltreatment*. 2011; 16(3):163–174. [PubMed: 21680641]
- Renner LM, Slack KS. Intimate partner violence and child maltreatment: Understanding intra- and intergenerational connections. *Child Abuse & Neglect*. 2006; 30:599–617. [PubMed: 16782195]
- Sedlak, AJ.; Mettenburg, J.; Basena, M.; Petta, I.; McPherson, K.; Greene, A., et al. *Fourth National Incidence Study of Child Abuse and Neglect (NIS-4): Report to Congress*. U.S. Department of Health and Human Services, Administration for Children and Families; Washington, DC: 2010.
- Shipman K, Taussig H. Mental health treatment of child abuse and neglect: The promise of evidence-based practice. *Pediatric Clinic of North America*. 2009; 56(2):417–428.
- Shonkoff JP, Fisher PA. Rethinking evidence-based practice and two-generation programs to create the future of early childhood policy. *Developmental Psychopathology*. 2013; 25(4pt2):1635–1653.
- Sidebotham P, Golding J, the ALSPAC Study Team. Child maltreatment in the children of the nineties: A longitudinal study of parental risk factors. *Child Abuse & Neglect*. 2001; 26:1243–1259. [PubMed: 12464299]
- Slack KS, Berger LM, DuMont K, Yang M, Kim B, Ehrhard-Dietzel S, Holl JL. Risk and protective factors for child neglect during early childhood: A cross-study comparison. *Children & Youth Service Review*. 2011; 33(8):1354–1363.
- Slack KS, Holl JL, McDaniel M, Yoo J, Bolger K. Understanding the risks of child neglect: An exploration of poverty and parenting characteristics. *Child Maltreatment*. 2004; 9(4):395–408. [PubMed: 15538038]
- Smith AL, Cross D, Winkler J, Jovanovic T, Bradley B. Emotional dysregulation and negative affect mediate the relationship between maternal history of child maltreatment and maternal child abuse potential. *Journal of Family Violence*. 2014; 29:483–494.
- Thompson R. Exploring the link between maternal history of childhood victimization and child risk of maltreatment. *Journal of Trauma Practice*. 2006; 5:57–72.
- Thornberry TP, Henry KL. Intergenerational continuity in maltreatment. *Journal of Abnormal Child Psychology*. 2013; 41:555–569. [PubMed: 23192742]
- Thornberry TP, Knight KE, Lovegrove PJ. Does maltreatment beget maltreatment? A systematic review of the intergenerational literature. *Trauma, Violence & Abuse*. 2012; 13(3):135–152.
- Topitzes J, Mersky J, Dezen K, Reynolds A. Adult resilience among maltreated children: A prospective investigation of main effect and mediating models. *Children & Youth Service Review*. 2013; 35:937–949.
- U.S. Department of Health and Human Services, National Center on Child Abuse and Neglect. *Child maltreatment 2011: Reports from the states to the National Child Abuse and Neglect Data System*. US Government Printing Office; Washington, DC: 2012.
- Walsh C, MacMillian H, Jamieson E. The relationship between parental psychiatric disorder and child physical and sexual abuse: Findings from the Ontario health supplement. *Child Abuse & Neglect*. 2002; 26(1):11–22. [PubMed: 11860159]
- Widom CS. Child abuse, neglect, and adult behavior: Research design and findings on criminality, violence, and child abuse. *American Journal of Orthopsychiatry*. 1989a; 59:355–367. [PubMed: 2764070]
- Widom CS. Does violence beget violence? A critical examination of the literature. *Psychology Bulletin*. 1989b; 106(1):3–28.
- Widom CS, Czaja SJ, Dutton MA. Childhood victimization and lifetime revictimization. *Child Abuse & Neglect*. 2008; 32:785–796. [PubMed: 18760474]

Young NK, Boles SM, Otero C. Parental substance use disorders and child maltreatment: Overlap, gaps, and opportunities. *Child Maltreatment*. 2007; 12(2):137–149. [PubMed: 17446567]

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 1

Alleged Perpetration by Maltreatment, Family Characteristics, and Youth Service System Contacts, Indicators of Adult Functioning

Variable	N size	Perpetrators %	Log-Rank statistic (p-value)
Childhood Maltreatment History			
AFDC-only (no maltreatment history)	2465	1.95	<0.0001
Neglect (single report)	983	3.46	
Sexual/physical abuse (single report)	618	3.40	
Multi-types (single report)	76	3.95	
Neglect (2+ reports)	1014	6.10	
Sexual/physical abuse (2+ reports)	161	1.90	
Multi-types (2+ reports)	1618	6.24	
Subject			
Gender			
Female	3491	5.56	<0.0001
Male	3444	2.24	
Race			
Non-white	5468	3.77	0.1014
White	1467	4.43	
Subject's Family During Childhood			
Lived in High Poverty Census tract			
< 19000 median income	3734	3.91	0.7903
19000+ median income	3201	3.91	
Poverty			
Childhood limited	1310	0.09	<0.0001
Childhood+Adolescence	5625	4.59	
<i>Caregiver History of Mental Health Tx</i>			
Yes	467	6.00	0.0102
<i>Caregiver High School Graduate</i>			
Yes	3830	2.90	<0.0001
<i>Caregiver History of Foster Care</i>			
Yes	165	5.45	0.002
<i>Caregiver History of Crime</i>			
Yes	481	4.16	0.0814
Subject's Child/Adolescent Service System Records			
<i>Mental Health Tx (Incl: Emo. Dist. Sped)</i>			
Yes	2445	5.69	<0.0001
<i>Health Tx for STD</i>			
Yes	320	6.56	0.0016
<i>Violent offense</i>			
Yes	1366	6.88	<0.0001
<i>Other Delinquency</i>			
	6173	3.60	0.0063

Variable	N size	Perpetrators %	Log-Rank statistic (p-value)
Yes	762	6.43	
<i>Runaway Record</i>	6565	3.41	<0.0001
Yes	370	12.7	
<i>Drug Problems</i>	6463	3.79	0.009
Yes	472	5.51	
<i>Special Education (excludes EmotDist)</i>	5423	3.78	0.1282
Yes	1512	4.37	
Subject's Adult Functioning Indicators			
<i>Adult poverty</i>	2786	1.68	<.0001
Yes	4149	6.07	
<i>Adult MH Diagnosis</i>	6308	3.15	<.0001
Yes	627	11.48	
<i>Adult Arrest</i>	6074	3.54	0.0108
Yes	861	6.50	

Note: Comparison groups for categorical variables ("no") provided in italics.

Table 2

Cox Regression Model of Adult Perpetration of Child Maltreatment

	Model 1	Model 2	Model 3	Model 4
Maltreatment (<i>never</i>)				
Neglect (single report)	1.79 **	1.54 *	1.39	1.34
Sexual/physical abuse (single report)	1.84 *	1.59	1.38	1.34
Multi-types (single report)	1.25	1.12	1.16	1.09
Neglect (2+ reports)	3.53 ***	2.88 ***	2.29 ***	2.12 ***
Sexual/physical abuse (2+ reports)	1.00	0.86	0.60	0.54
Multi-types (2+ reports)	4.01 ***	3.06 ***	2.01 **	1.85 **
Wald $\chi^2=73.251(6)$, $p<.0001$				
Child & Family Characteristics				
Gender (<i>male</i>)				
Female		2.49 ***	2.90 ***	2.47 ***
Race (<i>Black</i>)				
White		1.26	1.27	1.29~
Family Poverty (<i>Childhood limited < 12only</i>)				
Adolescent & Childhood poverty		3.06 ***	2.31 **	1.34
Caregiver High School Graduate (<i>no</i>)				
Yes		0.64 **	0.64 **	0.65 **
Caregiver History of Foster Care (<i>no</i>)				
Yes		1.86	2.04 *	2.22 *
Caregiver History of Arrest (<i>no</i>)				
Yes		0.57	0.64	0.68
Wald $\chi^2=161.299(13)$, $p<.0001$				
Adolescent Behavior /Service Contacts				
Record of Runaway(<i>No</i>)			3.31 ***	3.23 **
Record of Drug Use(<i>No</i>)			1.65 *	1.46
Record of Violence(<i>No</i>)			2.19 ***	1.91 ***
Record of Delinquency(<i>No</i>)			2.04 ***	1.85 **
Mental Health DSM or Educ. Dx (<i>No</i>)			1.44 *	1.30
Wald $\chi^2=292.95(20)$, $p<.0001$				
Adult Well-being Concerns				
Poverty Indicator				3.74 ***
Mental Health Services Use				1.44 *

	Model 1	Model 2	Model 3	Model 4
Record of Arrest				1.39 [~]
Time interactions				
Runaway [*] time			0.99 [~]	0.99 [*]
MH (50-70)			0.56	0.56
Caregiver crime [*] time		1.01 [*]	1.01 [*]	1.01 [*]

Wald $\chi^2=351.98(23)$, $p<.0001$

Time is measured in months from age 17 to end of study or perpetration event (1-129).

Comparison groups are identified in italics and HR for these = 1.0

p<.0001

**
.0001<p<.01

*
.01<p<=.05

[~]
p=0.056