Impact of Physical Abuse on Internalizing Behavior Across Generations

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Abstract

This study investigated the multigenerational impact of mothers' own exposure to physical maltreatment on internalizing symptoms in her child after accounting for her parenting practices, depression, and the child's own exposure to stressful life events. Children (n = 101, ages 5–16), predominantly African American, were recruited into this cross sectional study using ethnographic mapping and targeted sampling for high-risk neighborhoods. Mothers reported retrospectively on their own exposure to physical maltreatment in childhood, their parenting practices, as well as current depressive symptoms. Maternal report of her child's exposure to stressful life events and child behavior was also collected. Maternal childhood exposure to physical maltreatment was significantly associated with her child's internalizing symptoms (p = .004); this effect remained after accounting for child sex, maternal depressive symptoms, harsh parenting practices, and the child's own exposure to stressful life events. Formal tests of mediation through these pathways were non-significant. Findings suggest mothers' experience of childhood maltreatment contributes uniquely to children's internalizing symptoms, potentially through previously uncharacterized

pathways. Examination of additional behavioral, psychosocial and biological pathways may help better describe the multi-generational effects of child maltreatment.

Keywords

child maltreatment; psychopathology; parenting; depression; family

Introduction

The recurrent public debate about corporal punishment and child physical maltreatment and the impact on children and families highlights both the prevalence of family violence as well as the critical need to better understand the etiology and consequences of this multi-generational issue (Dyson, 2014). This need is accentuated given the substantial literature base demonstrating that not only is corporal punishment an ineffective discipline strategy (AAP, 1998), it is also associated with significant negative psychological and physical health consequences (Ferguson, 2013; Sturge-Apple, Davies, Martin, Cicchetti, & Hentges, 2012). Additionally, some studies document continuity in harsh parenting practices, particularly corporal punishment, measured both retrospectively and prospectively in studies involving direct observation of parenting practices (Brook, Lee, Finch, & Brown, 2012; Neppl, Conger, Scaramella, & Ontai, 2009). As such, the negative health consequences of physical maltreatment may, in fact, span generations. Illuminating the pathways from physical maltreatment to child outcomes can support the effective targeting of novel interventions to decrease both the incidence and the impact of harsh parenting practices and child maltreatment.

A significant body of literature highlights the relevance of early life stress to later health and behavior outcomes in adults. The seminal work in this area arose from the Adverse Childhood Events study (ACE), which included a variety of questions exploring exposure to significant negative early life experiences including physical maltreatment (Felitti et al., 1998). The ACE study, and several replications of its findings, document that retrospective reports of early life stress have a cumulative association with a range of negative health outcomes, including depression, obesity, diabetes, cancer and cardiovascular disease (Felitti, 2002).

Although this work has significant public health relevance in and of itself, recent data suggests that the behavioral effect of child maltreatment may extend to subsequent generations (Collishaw, Dunn, O'Conner, & Golding, 2007; Rijlaarsdam et al., 2014; Roberts, O'Conner, Dunn, & Golding, 2004). For example, children of mothers with a history of childhood maltreatment were found to have poorer behavioral trajectories between the ages of 4 and 7 (Collishaw et al., 2007). Even more recently, Rijlaarsdam et al. (2014) demonstrated that maternal maltreatment history was longitudinally associated with her offspring's externalizing and internalizing behavior, a pathway that was mediated by maternal characteristics, including mood (for externalizing and internalizing behavior) and discipline (for externalizing behavior).

Several potential pathways in the transmission of impact of physical abuse across generations have been suggested from previous work, including harsh parenting, maternal mood symptoms, and children's experiences of stressful life events. Parental harsh discipline behavior, including physical aggression and corporal punishment, has been linked to child behavioral and emotional outcomes (Dehon & Weems, 2010; Thompson & Wiley, 2009). Further, in a recent review by Thornberry, Knight, and Lovegrove (2012), exposure to child maltreatment was an established predictor of physical abuse, suggesting that harsh discipline represents one transgenerational pathway related to early child maltreatment (Berlin, Appleyard, & Dodge, 2012; Rijlaarsdam et al., 2014) – although notably, data on the intergenerational transmission of child maltreatment is mixed, with some studies finding higher likelihood of subsequent maltreatment among victims and others failing to observe this association (Ben-David, Jonson-Reid, Drake & Kohl, 2015). In addition to risk for maltreatment perpetration, parents with histories of physical maltreatment may also be at risk for harsh/physical discipline parenting tactics that may not meet the threshold for physical abuse but nonetheless show associations with child behavioral outcomes (Rijlaarsdam et al., 2014). While the majority of these studies have examined the association between harsh parenting and children's externalizing and aggressive behaviors (Brook et al., 2012), harsh parenting has also emerged as a strong predictor and risk factor for high internalizing (anxiety and depression) symptoms, both concurrently (Bender et al., 2007; Bugental, Martorell, & Barraza, 2003; Laskey & Cartwright-Hatton, 2009), and longitudinally (Leve, Kim, & Pears, 2005).

It has also been suggested that the elevated risk of maternal depression and other mood disorders as a consequence of child maltreatment may contribute to negative effects in the subsequent generation, particularly given the robust body of literature linking hostile parenting to caregiver negative affect states, including depression (Heim & Nemeroff, 2001; Rueger, Katz, Risser, & Lovejoy, 2011). Children with depressed mothers have significantly higher rates of internalizing symptoms relative to children whose mothers are not depressed (Connell & Goodman, 2002; Goodman et al., 2011). While genetic and biological contributions likely contribute to this link (Franklin et al., 2010), intergenerational effects of maltreatment may also contribute to elevated risk. For example, harsh parenting experienced in the first generation (G1) may precipitate risk for mental health vulnerabilities and harsh parenting in the second generation (G2), contributing to continuity in mental health risk in the third generation (G3; Neppl et al., 2009).

A third potential multigenerational pathway may operate through children's own exposures to stressful life events. Maternal internalizing psychopathology, including PTSD and depression, is associated with increased risk for children's exposure to stressful life events (Chemtob, Gudino, & Laraque, 2013). It is also well-documented that exposure to stressful life events, such as witnessing violence, precipitates risk for negative mental health outcomes in children (Pine & Cohen, 2002), and indeed risk can accumulate as the number of exposures increases (Turner, Finkelhor, & Ormrod, 2006). Hence, children's exposure to stressful life events represents another pathway through which maternal maltreatment histories may impact internalizing behavior in the next generation.

The current study examines the association between maternal exposure to childhood physical maltreatment on *her children's* internalizing behaviors, while accounting for harsh parenting, maternal depressive symptoms, and children's exposure to stressful life events. We hypothesized that maternal exposure to physical maltreatment in childhood would significantly predict her child's internalizing behavior. Additionally, we hypothesized that specified predictors would partially mediate the association between maternal physical maltreatment and offspring internalizing behavior – namely, maternal depressive symptoms, harsh parenting practices, and stressful life events. However, it was hypothesized that this would only be a *partially* mediated pathway – in other words, that the relation between maternal history of maltreatment and child internalizing behaviors would be robust to mothers' harsh parenting practices, maternal depressive symptoms, and children's own exposure to stressful life events. Given that in extant research, externalizing behaviors are more frequently studied as outcomes of interest in intergenerational models of maltreatment (e.g., Neppl et al., 2009), this report focused on internalizing behaviors.

Method

Participants

Mothers of children aged 5–16 years ($n = 101$) were recruited from the greater New Orleans, Louisiana, U.S. area as part of a larger study examining neighborhood influences on health disparities in children that took place between January 2012 and July 2013. Mean age of children was 9.69 years (range = 5–16 years). Approximately half (55.0%) of children were female. Approximately three-fourths of mothers had a high school degree or more and over 90% of youth were identified as African American; high school attainment levels were therefore slightly lower than New Orleans overall (86%) and African American youth, who made up 58% of New Orleans youth in 2015, were over-represented in this sample (Data Center, 2016). Mean age of mother was 33.9 (24.0–53.0).

Procedures

Parents and children were recruited using street outreach techniques, including ethnographic mapping and targeted sampling (Watters & Biernacki, 1989) and targeted schools and pediatric clinics in these communities. Recruitment neighborhoods were identified using the community identification process (Tashima, Crain, O'Reilly, & Elifson, 1996), a mapping method to record epidemiological indicators of the prevalence and incidence of community violence and other selected social and health conditions. Letters were sent home to parents in elementary schools and fliers were posted in waiting rooms in pediatric clinics in the targeted area. Field staff also approached families in the waiting rooms of pediatric clinics. The study was described as one that would examine neighborhood conditions and children's health, including oral health, obesity, diet, physical activity and stress. Interested families contacted the research site to schedule an appointment. Participants were georeferenced to their census tract (proxy for neighborhood) and approximately 51 census tracts (out of 177 city tracts), spread out over all major areas of the city.

Children and mothers provided self-report and physical health data across a range of outcomes in the larger study; for all variables of interest in this analysis, parents were the

reporter. Data about the child was collected from mothers using an interviewer-assisted computer survey (Nova Research, Bethesda, MD) administered face-to-face in a private room at the research site. Given the nature of the analysis, only subjects where the biological mother was the reporting caregiver were included (84% of initial sample). The study was approved by the Tulane University Institutional Review Board.

Measures

Maternal depressive symptoms—Maternal self-report of current depressive symptoms was assessed by the Center for Epidemiological Studies Depression Scale (CES-D), a screening measure developed to identify current depressive symptomatology related to major or clinical depression in adults and adolescents (Cronbach's alpha = 0.78; Radloff, 1977).

Maternal exposure to child maltreatment—A single item from the Adverse Childhood Experiences Study Questionnaire (Felitti et al., 1998) was used to measure maternal retrospective report of her own exposure to physical maltreatment prior to the age of 18. Mothers reported retrospectively on the presence or absence of 10 adverse life events before the age of 18; the item of interest in this study was, "While you were growing up, during your first 18 years of life, did a parent or other adult in the household often or very often push, grab, slap, or throw something at you, or ever hit you so hard that you had marks or were injured?." Responses were categorized dichotomously as yes or no.

Maternal harsh parenting—Maternal parenting strategies were assessed with the Conflict Tactics Scale, Parent-Child (CTS-PC; Straus, Hamby, Finkelhor, Moore, & Runyan, 1998). Due to measurement constraints, we did not assess maltreatment or physical abuse in the current generation; instead, we measured parents' harsh parenting tactics, including corporal punishment. On this measure, mothers reported on the frequency of their usage of parenting tactics over the past year. This analysis focused on the six items of the minor assault/corporal punishment scale, designed to capture frequency of usage of corporal punishment tactics; sample item includes "spanked the child because s/he was misbehaving or acting up." While the full CTS-PC includes more severe items consistent with physical maltreatment, we excluded these items from our data collection given ethical and IRB issues with the most severe questions (Guterman, Lee, Waldfogel, & Rathouz, 2009). Notably, many published works in studies of child maltreatment have relied on parallel measurement paradigms (e.g., Taylor, Guterman, Lee & Rathouz, 2009). Given the directed nature of the study hypotheses, the nonviolent discipline, psychological aggression, and neglect scales were not included. Parents reported on the frequency with which they used tactics over the previous year: once (1); twice (2); 3–5 times (4); 6–10 times (8); 11–20 times (15); more than 20 times (20); and never (0). Estimates of occurrence over the past year were summed across subscales (Cronbach's alpha = 0.72). The CTSPC has established discriminate and construct validity (Straus et al., 1998).

Child internalizing behavior—The primary outcome variable was maternal report of children's internalizing behaviors, assessed using the sum of the internalizing scale from the Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983). The CBCL is a widely-used checklist of problem behaviors in the past 6 months. The 31-item internalizing scale

captures anxious, withdrawn, somatic, or depressive behaviors, such as "feels worthless or inferior" or "self-conscious or easily embarrassed." Behaviors are rated by mothers as occurring rarely/never (0), sometimes (1), or often (2).

Child life events—Direct exposure to stressful events in the child was assessed with the life events measure within the Post Traumatic Stress Disorder Module of the Preschool Age Psychiatric Assessment (PAPA; Egger, Erkanli, Keeler, Potts, Walter, & Angold, 2006). The PAPA is an interview-based assessment that was initially designed for caregivers of children ages 2–5 years old; however, given that life events in the measure are not developmentally sensitive and are stressors across childhood, this measure was used for all children in this sample. Mothers reported on children's exposure to 21 stressful (e.g., death of pet) and potentially traumatic events (e.g., a medical hospitalization or witnessing a murder or death). A sum variable indicating children's cumulative exposure to stressful life events was created, ranging from 0 to 21 (Cronbach's alpha = 0.60).

Additional covariates—These included maternal and child age; child sex (male/female); and maternal highest educational attainment as a proxy for SES (Braveman et al., 2005). The full sample included over 90% of children whose parents identified them as African American. As patterns of results were similar in analyses that restricted to only African American children, results are reported from the full analytic sample.

Data Analysis

Univariate, bivariate, and multivariate analyses were performed using SAS version 9.3. Thirty-eight percent of enrolled families had more than one child participate (range = 1–5) and caregivers reported separately on each child. Generalized estimating equation (GEE) analysis was utilized to account for correlation between siblings or children living within the same household (Intraclass Correlation Coefficient or ICC = 42.3%), accounting for potential shared variance within household or reporter (including potential genetic and environmental effects). Additionally, to accommodate the skewed distribution of the outcome variable, we evaluated differences using a generalized linear model and specified Poisson regression. Bivariate analyses examined crude associations and potential confounding, included chi-square or Fisher's exact tests where appropriate for categorical variables and t-test or one-way ANOVA for continuous and categorical comparisons. Bivariate analyses were also conducted using GEE to ensure that correlated data did not inflate findings. A test of collinearity was performed to ensure predictors were independently associated with outcome variables. In multivariate models including potential pathways (e.g., maternal depressive symptoms, harsh parenting, and child exposure to life events), mediation was formally examined for each path independently utilizing the PROCESS Macro (Hayes, 2013). Moderation by sex and age was also examined. Resulting sample size in multivariate analyses was N=90.

Results

Respondent and child characteristics by maternal exposure to physical abuse are presented in Table 1. Maternal depressive symptoms scores ranged from 9.0 to 52.0 with a mean of

21.76, which is notably above the cutoff indicating risk for clinical depression (16; Radloff, 1977), possibly reflecting the higher risk pool recruited through sampling techniques. Conflict Tactics frequencies for harsh parenting tactics averaged 10.62 events (± 14.9). Child internalizing behavior sum scores ranged from 0.0 to 29.0, with a mean of 6.71, within the normative range (Achenbach & Edelbrock, 1983).

Approximately 25% of mothers in this sample reported that they were exposed to physical maltreatment before the age of 18; this is higher than the proportion of exposed mothers in the original ACES survey of 9,508 adults screened through medical clinics, where a prevalence rate of 10.8% was observed, again perhaps reflecting the higher risk pool recruited through sampling techniques. No significant difference in maternal age or child age was found between exposed and unexposed mothers. As shown in Table 1, there were no observed differences in the use of harsh parenting strategies between mothers who did and did not experience physical maltreatment. Children's internalizing scores were significantly higher in children whose mothers reported physical maltreatment in their own childhood ($t = 2.62$, $p = 0.01$, $d = 0.68$).

The crude association between maternal childhood physical maltreatment and child internalizing behavior remained significant after controlling for key covariates, including child age and sex, and maternal age and education (see Table 2). Internalizing scores were, on average, almost 5 points higher among children with mothers exposed to physical maltreatment ($β= 4.88$, SE= 1.67, p=0.004), explaining an additional 8.8% of the variance. After controlling for child exposure to life events, maternal depressive symptoms, and harsh parenting strategies, the impact of maternal physical maltreatment was reduced but remained significantly associated with child internalizing ($β= 3.77$, SE= 1.33, p=0.005). With the inclusion of these covariates, an additional 13.5% of the variance in internalizing symptoms was explained. Mediation, tested using the PROCESS Macro, was not significant for child life events (indirect effect = −0.51, Bootstrapped SE = 0.53, Bootstrapped CI = −0.29, 1.83), maternal depressive symptoms (indirect effect = 0.13, Bootstrapped SE = 0.30, Bootstrapped CI = −0.16, 1.26), or harsh parenting strategies (indirect effect = −0.06, Bootraped SE = 0.26, Bootstrapped CI = −1.10, 0.29). Furthermore, we identified no significant effect modification by sex or age of the child. Results were similar even when restricting the sample to one child per household.

Discussion

This study examined a multi-pathway, multi-generational model of the impact of mother's exposure to physical maltreatment during her childhood on internalizing symptoms in her children. In this study, maternal report of her own exposure to being frequently hit, pushed, shoved before the age of 18 was significantly associated with internalizing symptoms in her children. This association remained significant even after accounting for maternal depressive symptoms, her own use of harsh parenting strategies, and the child's own exposure to stressful life events. Mediation analyses by each of these potential pathways – harsh parenting strategies, maternal depressive symptoms, and stressful life events - were not significant. While a fully mediated pathway was not hypothesized, we nonetheless predicted partial mediation through these pathways, described and documented elsewhere in the

literature. While the failure to observe mediation is somewhat surprising, it is also consistent with the sometimes mixed association observed linking child maltreatment victimization to later parenting practices (Ben-David, Jonson-Reid, Drake, & Kohl, 2015).

Taken together, this pattern of results indicates that child physical abuse may have an effect across generations beyond psychosocial risk pathways suggested by the literature, including harsh parenting, maternal mood, and children's exposure to stressful life events. These results contribute to a growing body of literature (Rijlaarsdam et al., 2014) that suggest negative and persistent multi-generational effects of child physical maltreatment. Previous research has documented the association of childhood internalizing behaviors with trauma exposure and harsh parenting, but also with biological factors (Gershoff, 2002; Kendall-Tackett, Williams, & Finkelhor, 1993; Levendosky, Huth-Bocks, Semel, & Shapiro, 2002). As the literature on multigenerational impacts of child maltreatment expands, a need for greater discrimination between transgenerational effects, in which the impact of an event is found in subsequent generations never exposed to the event, and intergenerational effects, in which the impact of the event is biologically transmitted directly to the next generation either through in utero exposure or germline effects, may help to further specify pathways of transmission. Our findings documenting an association between child internalizing behaviors and maternal preconception maltreatment robust to other psychosocial pathways suggest that a transgenerational perspective – that is, the exploration of novel pathways, including epigenetic and physiologic (Roth, Lubin, Funk, & Sweatt, 2009) – may provide insight into the mechanisms through which maltreatment impacts development across generations. Epidemiological studies indicating the high prevalence of physical discipline, child physical abuse and family violence (Finkelhor, Turner, Shattuck, & Hamby, 2013) highlight the applied importance of understanding the transgenerational and downstream effects of experiences of physical maltreatment in childhood.

Strengths and Limitations

There are several strengths to this study. First, this study was a community-recruited sample. Although predicted to be high risk, this sample was not selected for child or parental psychopathology and therefore is more generalizable to at-risk youth, particularly African American youth, who were over-represented in this sample. Our study also explored potential mediated pathways, leveraging current risk models associated with maltreatment, including maternal depression, harsh parenting, and child exposure to stressful life events – though contrary to hypotheses, no mediation was observed. Our failure to observe mediation, consistent with the sometimes mixed association observed linking child maltreatment victimization to later parenting practices (Ben-David, Jonson-Reid, Drake, & Kohl, 2015), is consistent with an additional transgenerational effect and tentatively suggests that additional, untested biological models may help to explain these pathways. However, additional confounding variables were not assessed that may account for some of the association; for example, our assessment of mothers' concurrent parenting practices relied on mothers' report of harsh parenting, as opposed to more severe types of physical maltreatment or official reports and records (Thornberry, Knight, & Lovegrove, 2012). Nonetheless, even after inclusion in our model of maternal depressive symptoms, harsh parenting practices and child specific stressful experiences, the association between maternal

exposure to physical maltreatment and children's internalizing behavior remained significant. The persistence of this association suggests that maternal childhood maltreatment may function as an independent and robust predictor of child internalizing symptoms in the next generation. At the very least, our results suggest that other significant pathways may exist and are important to explore.

Although the current study provides insight into the complex influences on child internalizing symptoms, limitations exist. Most critically, all variables were derived from maternal report, and this single source of data may create inflated associations through response bias. Additionally, the data is cross-sectional. Cross-sectional analysis precludes insight into factors that may predispose versus maintain the experience of internalizing symptoms in these children, as well as how these relations change over the course of development. While the analytic tests employed allowed for cross-sectional examination of mediated effects, tests of true mediation require longitudinal design. Further, the cross-sectional nature prevents disentanglement of bi-directional effects. It is likely that children's symptoms contribute to parents' mental health or parenting practices in a reciprocal fashion across childhood (Kim et al., 2003). Larger, longitudinal studies to capture developmental trajectories, precisely address issues about bidirectional effects, and more robustly understand etiology are needed. We did not replicate the association between mothers' reports of her own physical maltreatment and parenting tactics (Thornberry, Knight, & Lovegrove, 2012). Mean depressive symptom scores across both groups were above the cutoff indicating clinical concern for depression on the CES-D, adding further credence to the high-risk nature of this sample; this finding of elevated depression in both groups may contribute to the lack of expected differences in harsh parenting between exposed and non-exposed mothers.

The lack of developmental specificity is also a limitation of the current study. These data are drawn from children across a range of ages; sampling stratified by age may further illuminate specific developmental processes and effects, though sample size precluded that in this study. Moreover, the generalizability of these results across racial groups is limited, as the majority of our sample was African American. Mothers' physical abuse history was measured by maternal retrospective report and therefore is subject to this frequent limitation in the child maltreatment literature. Although we controlled for maternal depression, maternal anxiety and other internalizing disorders were not captured in this study, representing an additional limitation. Lastly, despite our strong model fit values, it is also important to note that the sample size is small.

Despite these limitations, our findings suggest that children of caregivers who themselves experienced physical abuse are at elevated risk for internalizing symptoms. Our model adds to the growing body of literature describing the complex interplay between maternal experiences, mood, parenting, and biology on child health and development. These findings, when combined with previous work (Rijlaarsdam et al., 2014), indicate that multi-level models that incorporate biological, psychological, social and cultural pathways are needed to best define the lasting impact of violence across generations. Additionally, they are consistent with public and mental health practice models that assess and treat children's internalizing behavior within the broader context of families (Goodman & Gotlib, 1999).

Childhood physical maltreatment may have detrimental effects that span generations and cut across behavioral and biological systems. In biological and epigenetic models, transgenerational perspectives have highlighted how the impact of an event can be observed in subsequent generations never exposed to the event. It is likely, given the evidence of the negative biological consequences of child maltreatment, that transgenerational biological processes, which are not fully captured in current psychosocial models of risk transmission via parenting or maternal depression, further contribute to the lasting effects of physical maltreatment (Bifulco et al., 2002). Carefully designed prospective studies with sufficient samples sizes are need to fully elucidate the independent and cumulative contribution of these factors in the development and maintenance of childhood internalizing symptoms. Moving forward, policy makers should consider that intervention and prevention efforts targeted at decreasing physical maltreatment may have protective behavioral effects on future generations.

Acknowledgments

References

Achenbach, TM., Edelbrock, C. Manual for the Child Behavior Checklist and Revised Child Behavior Profile. Burlington, VT: University of Vermont; 1983.

American Academy of Pediatrics, Committee on Psychosocial Aspects of Child and Family Health. Guidance for effective discipline. Pediatrics. 1998; 101(4):723–728. [PubMed: 9521967]

Ben-David V, Jonson-Reid M, Drake B, Kohl PL. The association between childhood maltreatment experiences and the onset of maltreatment perpetration in young adulthood controlling for proximal and distal risk factors. Child Abuse & Neglect. 2015; 46:132–141. [PubMed: 25682732]

Bender HL, Allen JP, McElhaney KB, Antonishak J, Moore CM, Kelly HO, Davis SM. Use of harsh physical discipline and developmental outcomes in adolescence. Developmental Psychopathology. 2007; 19:227–242.

Berlin LJ, Appleyard K, Dodge KA. Intergenerational continuity in child maltreatment: Mediating mechanisms and implications for prevention. Child Development. 2012; 82:162–176.

Bifulco A, Moran PM, Ball C, Jacobs C, Baines R, Bunn A. Childhood adversity, parental vulnerability and disorder: Examining inter-generational transmission of risk. Journal of Child Psychology & Psychiatry. 2002; 43:1075–1086. [PubMed: 12455928]

Braveman PA, Cubbin C, Egerter S, Chideya S, Marchi KS, Metzler M, Posner S. Socioeconomic status in health research: One size does not fit all. Journal of the American Medical Association. 2005; 294:2879–2888. [PubMed: 16352796]

Brook JS, Lee JY, Finch SJ, Brown EN. The association of externalizing behavior and parent-child relationships: An intergenerational study. Journal of Child & Family Studies. 2012; 21:418–427. [PubMed: 23667304]

Bugental DB, Martorell GA, Barraza V. The hormonal costs of subtle forms of infant maltreatment. Hormones & Behavior. 2003; 43:237–244. [PubMed: 12614655]

Chemtob CM, Gudino OG, Laraque D. Maternal Posttraumatic Stress Disorder and Depression in pediatric primary care: Association with child maltreatment and frequency of child exposure to traumatic events. JAMA Pediatrics. 2013; 167:1011–1018. [PubMed: 23999612]

Collishaw S, Dunn J, O'Conner TG, Golding J. Maternal childhood abuse and offspring adjustment over time. Developmental Psychopathology. 2007; 19:367–383.

Connell AM, Goodman SH. The association between psychopathology in fathers versus mothers and children's internalizing and externalizing behavior problems: A meta-analysis. Psychological Bulletin. 2002; 128:746–773. [PubMed: 12206193]

Data Center. Who lives in New Orleans and metro parishes now?. 2016. Retrieved from Data Center website: http://www.datacenterresearch.org/data-resources/who-lives-in-new-orleans-now/

Dehon C, Weems C. Emotional development in the context of conflict: Effects of interparental violence on children. Journal of Child and Family Studies. 2010; 19:287–297.

Dyson, ME. Punishment or Child Abuse?. New York Times. 2014 Sep 17. Retrieved from http://www.nytimes.com/2014/09/18/opinion/punishment-or-child-abuse.html?_r=0

Egger H, Erkanli A, Keeler G, Potts E, Walter B, Angold A. Test-retest reliability of the Preschool Age Psychiatric Assessment (PAPA). Journal of the American Academy of Child and Adolescent Psychiatry. 2006; 45:538–549. [PubMed: 16601400]

Felitti VJ. The relationship between adverse childhood experiences and adult health: Turning gold into lead. The Permanente Journal. 2002; 6:44–47.

Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz AM, Edwards V, … Marks JS. Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults: The Adverse Childhood Experiences (ACE) Study. American Journal of Preventive Medicine. 1998; 14:245–258. [PubMed: 9635069]

Ferguson CJ. Spanking, corporal punishment and negative long term outcomes: A meta-analytic review of longitudinal studies. Clinical Psychology Review. 2013; 33:196–208. [PubMed: 23274727]

Finkelhor D, Turner HA, Shattuck A, Hamby SL. Violence, crime, and abuse exposure in a national sample of children and youth: an update. JAMA Pediatrics. 2013; 167:614–621. [PubMed: 23700186]

Franklin TB, Russig H, Weiss IC, Gräff J, Linder N, Michalon A, … Mansuy IM. Epigenetic transmission of the impact of early stress across generations. Biological Psychiatry. 2010; 68:408–415. [PubMed: 20673872]

Gershoff ET. Corporal punishment by parents and associated child behaviors and experiences: A meta-analytic and theoretical review. Psychological Bulletin. 2002; 128:539–579. [PubMed: 12081081]

Gershoff ET, Lansford JE, Sexton HR, Davis - Kean P, Sameroff AJ. Longitudinal links between spanking and children's externalizing behaviors in a national sample of White, Black, Hispanic, and Asian American families. Child Development. 2012; 83:838–843. [PubMed: 22304526]

Goodman SH, Connell AM, Hall CM, Broth MR, Hall CM, Heyward D. Maternal Depression and child psychopathology: A meta-analytic review. Clinical Child & Family Psychology Review. 2011; 14:1–27. [PubMed: 21052833]

Goodman SH, Gotlib IH. Risk for psychopathology in the children of depressed mothers: A developmental model for understanding mechanisms of transmission. Psychological Review. 1999; 106(3):458. [PubMed: 10467895]

Guterman NB, Lee Y, Lee SJ, Waldfogel J, Rathouz PJ. Fathers and maternal risk for physical child abuse. Child Maltreatment. 2009; 14:277–290. [PubMed: 19581432]

Hayes, AF. Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach. New York: Guilford Press; 2013.

Heim C, Nemeroff CB. The role of childhood trauma in the neurobiology of mood and anxiety disorders: Preclinical and clinical studies. Biological Psychiatry. 2001; 49:1023–1039. [PubMed: 11430844]

Kendall-Tackett KA, Williams LM, Finkelhor D. Impact of sexual abuse on children: A review and synthesis of recent empirical studies. Psychological Bulletin. 1993; 113:164–180. [PubMed: 8426874]

Kim IJ, Ge X, Brody GH, Conger RD, Gibbons FX, Simons RL. Parenting behaviors and the occurrence and co-occurrence of depressive symptoms and conduct problems among African American children. Journal of Family Psychology. 2003; 17:571–583. [PubMed: 14640806]

Laskey BJ, Cartwright-Hatton S. Parental discipline behaviours and beliefs about their child: Associations with child internalizing and mediation relationships. Child: Care, Health & Development. 2009; 35:717–727.

Leve LD, Kim HK, Pears KC. Childhood temperament and family environment as predictors of internalizing and externalizing trajectories from age 5 to age 17. Journal of Abnormal Child Psychology. 2005; 33:505–520. [PubMed: 16195947]

Levendosky AA, Huth-Bocks AC, Semel MA, Shapiro DL. Trauma symptoms in preschool-age children exposed to domestic violence. Journal of Interpersonal Violence. 2002; 17:150–164.

Neppl TK, Conger RD, Scaramella LV, Ontai LL. Intergenerational continuity in parenting behavior: Mediating pathways and child effects. Developmental Psychology. 2009; 45:1241–1256. [PubMed: 19702389]

Pine DS, Cohen JA. Trauma in children and adolescents: Risk and treatment of psychiatric sequelae. Biological Psychiatry. 2002; 51(7):519–531. [PubMed: 11950454]

Radloff L. The CES-D Scale: A self-report depression scale for research in the general population. Applied Psychological Measurement. 1977; 1:385–401.

Rijlaarsdam J, Stevens G, Jansen PW, Ringoot AP, Jaddoe VW, Hofman A, … Tiemeier H. Maternal childhood maltreatment and offspring emotional and behavioral problems: Maternal and paternal mechanisms of risk transmission. Child Maltreatment. 2014; 19:67–78. [PubMed: 24642695]

Roberts R, O'Connor T, Dunn J, Golding J. The effects of child sexual abuse in later family life: Mental health, parenting and adjustment of offspring. Child Abuse & Neglect. 2004; 28:525–545. [PubMed: 15159068]

Roth TL, Lubin FD, Funk AJ, Sweatt JD. Lasting epigenetic influence of early-life adversity on the BDNF gene. Biological Psychiatry. 2009; 65:760–769. [PubMed: 19150054]

Rueger SY, Katz RL, Risser HJ, Lovejoy C. Relations between parental affect and parenting behaviors: A meta-analytic review. Parenting: Science & Practice. 2011; 11:1–33.

Straus MA, Hamby SL, Finkelhor D, Moore DW, Runyan D. Identification of child maltreatment with the parent-child conflict tactic scales: Development and psychometric data for a national sample of American parents. Child Abuse & Neglect. 1998; 22:249–270. [PubMed: 9589178]

Sturge-Apple ML, Davies PT, Martin MJ, Cicchetti D, Hentges RG. An examination of the impact of harsh parenting contexts on children's adaptation within an evolutionary framework. Developmental Psychology. 2012; 48:791–805. [PubMed: 22229853]

Tashima N, Crain C, O'Reilly K, Elifson CS. The community identification (CID) process: A discovery model. Qualitative Health Research. 1996; 6:23–48.

Taylor CA, Guterman NB, Lee SJ, Rathouz PJ. Intimate partner violence, maternal stress, nativity, and risk for maternal maltreatment of young children. American Journal of Public Health. 2009; 99:175. [PubMed: 19008518]

Thompson R, Wiley TR. Predictors of re-referral to child protective services: A longitudinal follow-up of an urban cohort maltreated as infants. Child Maltreatment. 2009; 14:89–99. [PubMed: 18923154]

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.

Turner HA, Finkelhor D, Ormrod R. The effect of lifetime victimization on the mental health of children and adolescents. Social science & medicine. 2006; 62(1):13–27. [PubMed: 16002198]

Watters JK, Biernacki P. Targeted sampling: Options for the study of hidden populations. Social Problems. 1989; 36:416–430.

Table 1

Characteristics of Participants by Maternal Physical Discipline

	Total (N=101) % or Mean (range)	Maternal Childhood Physical Abuse (n=26) % or Mean (range)	No Maternal Childhood Physical Abuse (n=75) % or Mean (range)
Child's sex			
Female	55.45	61.54	53.33
Male	44.55	38.46	46.67
Mean age of child (range)	9.69 (5.00–16.00)	9.35 (5.00–16.00)	9.81 (5.00–15.00)
Mean age of mother (range)	34.45 (24.00–53.00)	32.96 (24.00–36.00)	34.87 (26.00–53.00)
Maternal education			
Less than high school	20.79	19.23	21.33
High school	28.71	42.31	24.00
Some college or college degree	50.50	38.46	54.67
Mean harsh parenting score (range)	10.62 (0.00–75.00)	10.67 (0.00–52.00)	10.61 (0.00–75.00)
Mean maternal depressive symptoms score (range)	21.76 (9.00–52.00)	24.08 (14.00–38.00)	20.96 (9.00–52.00)
Mean child adverse life events (range)	8.33 (0.00–18.00)	9.48 (4.00–18.00) [a]	7.93 (0.00–17.00)
Mean child internalizing behavior (range)	6.71 (0.00–29.00)	**8.87 (0.00–28.00)** [a]	**4.31 (0.00–29.00)**

Note.

[a] $p<0.05$ based on Likelihood Ratio Chi-square or t-test where appropriate.

Table 2

Final Multivariate Models: Maternal childhood physical abuse and child internalizing behavior (N=90)

	Beta coefficient (β)	Standard Error (SE)	p-value
Model 1. Covariates only			
Intercept	−9.55	4.81	0.047
Maternal education (ordinal)	−0.65	0.82	0.431
Child sex (Male vs. Female)	3.29	1.09	0.002
Child age (years)	−0.15	0.28	0.585
Maternal age (years)	0.37	0.18	0.040
R-square	17.8%		
Model 2. Impact of maternal childhood physical abuse			
Intercept	−13.74	4.97	0.008
Maternal childhood physical abuse (yes)	4.88	1.67	0.004
Maternal education (ordinal)	−0.51	0.75	0.498
Child sex (Male vs. Female)	3.35	0.97	0.001
Child age (years)	−0.18	0.28	0.515
Maternal age (years)	0.43	0.19	0.021
R-square	26.6%		
Model 3. Mediation and direct impact of child life events, maternal depressive symptoms, and maternal parenting strategies			
Intercept	−19.83	4.88	<.0001
Maternal childhood physical abuse (yes)	3.77	1.33	0.005
Maternal education (ordinal)	−0.61	0.78	0.430
Child sex (Male vs. Female)	3.56	0.94	0.000
Child age (years)	−0.37	0.27	0.166
Maternal age (years)	0.49	0.15	0.001
Child life events (0–21)	0.51	0.15	0.001
Maternal depressive symptoms (9–52)	0.11	0.09	0.225
Maternal parenting strategies (0–75)	0.04	0.04	0.354
R-square	40.1%		

	Indirect effect Beta coefficient (β)	Standard Error (SE)	Bootstrapped 95% Confidence Interval
Child life events (0–21)	−0.06	0.26	−1.02, 0.29
Maternal depressive symptoms (9–52)	0.51	0.53	−0.29, 1.83
Maternal parenting strategies (0–75)	0.13	0.30	−0.16, 1.26