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Child Maltreatment and Adult Health in a National Sample: Heterogeneous Relational Contexts, Divergent Effects?*

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Abstract

This study considers the long-term health consequences of child maltreatment. Distinct from previous research, we examine the effects of maltreatment in the context of more general parental evaluations. Analyses used retrospective and current data from the Midlife Development in the United States (MIDUS) study. A considerable proportion of middle- and older-age adults who experienced frequent maltreatment nevertheless evaluated the relationship with their offending parent as “excellent”, “very good”, or “good” (e.g., 47% for physical and emotional maltreatment by mothers). Maltreated respondents generally evaluated their maltreating parents less favorably than non-maltreating parents, but there was considerable variation in these recollected relationships. Adults who experienced child maltreatment reported a greater number of chronic medical conditions and physical symptoms and lower self-rated health, but effects were smaller when they had positive relationships with their parents than when one or more of the relationships was perceived as negative. These findings highlight a common and seemingly paradoxical pattern among MIDUS participants: the co-presence of harsh parental behavior and positive recollections of parental relationships during childhood. Moreover, these surprising patterns of retrospective interpretation predict very different experiences of adult health—health problems are most pronounced among maltreatment in cases where the respondent had a generally negative relationship with one or more of his or her parents.

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Introduction

Maltreatment during childhood has a lasting effect on health over the life course. Many studies link retrospective reports of physical and emotional maltreatment to adult health problems, including cancer (Morton, Schafer, & Ferraro, 2012), obesity (Greenfield & Marks, 2009), chronic disease (Felitti et al., 1998; Springer, Sheridan, Kuo, & Carnes, 2007), and self-rated health (Irving & Ferraro, 2006). Cogently summarizing this body of research, Greenfield argues that “child abuse can be considered as a life-course social determinant of health” (2010, p. 53).

Instructive as this literature has been, research on the long-term health effects of child maltreatment has seldom attended to the heterogeneity of family context existing in abusive and non-abusive homes. Evidence for such heterogeneity has been growing over the past several decades. An observational study of 71 physically abusive American mothers and fathers, for instance, identified two divergent parental clusters—one that was negative, insensitive, and harsh, but another that was primarily positive, sensitive, and engaged in the course of parent-child interaction (Haskett, Scott, & Ward, 2004). Similar findings emerge from an earlier prospective study of 44 abusive mothers followed from their child's infancy until preschool (Farber & Egeland, 1987). In spite of such adverse conditions, the authors report that slightly over half of these young children were securely attached to their mothers. In addition, children's interpretation of maltreatment can vary greatly, even within a single society or ethnic group (Cyr, Michel, & Dumas, 2013). Whereas some children interpret abusive parenting as unfavorable or unjustified, others may recall this event as discipline and, therefore, appropriate parenting during that historical period (Wind & Silvern, 1994:441). Indeed, families develop distinct scripts for what is “normal” and expected in the household (cf., Handel & Whitchurch, 1994, p. 173-175).

This heterogeneity in parenting styles and a child's assessment of parenting may play a pivotal role in explaining the diverse outcomes that have been observed among maltreated children. For example, Chandy and colleagues (1997) report that the perception of at least one parent as caring can decrease risky behaviors such as suicidal ideation and drug use among male Minnesota high school students who report being sexually abused. Another study among physically maltreated high school males and females corroborates the importance of parental support, showing that adolescents with helpful, loving, and supportive parents are less likely to drink alcohol, smoke, or attempt suicide than those reporting less parental support (Perkins & Jones, 2004). Exploring the common co-presence of support and maltreatment within a household, Wind and Silvern (1994) find that recalled warm parenting has an association with adult women's self-esteem and depression distinct from the effects of recalled physical maltreatment. Rikhye et al. (2008) also document a significant effect of paternal bonding on adults' quality of life above and beyond the contribution of child maltreatment.

Taken together, these studies imply a critical role for the family context within which maltreatment occurs. Haskett and colleagues (2006) note that “though the family environment of maltreated children tends to be much more dysfunctional than that of nonmaltreated children, individual differences in parenting and family processes are evident

and are *predictive of diversity in outcomes* for abused and neglected children” (pg. 804, emphasis added). Little research, however, has moved beyond mental health and risk behaviors to examine how differences in parent-child relationships may influence long-term physical health among adults.

The purpose of this research is to address that gap. Starting from the assumption that physical or emotional maltreatment is not a homogeneous early life experience, this article considers people's capacity for positive recollections of family life intermixed with memories of maltreatment. The goal is to assess whether long-term effects of child maltreatment on adult health vary along these bases of experiential incongruity. Specifically, we consider whether the health consequences of child maltreatment differ according to the quality of recalled parental relationships.

Using data from a nationally representative survey of American adults, this study poses three basic questions. First, to what extent do respondents demonstrate mixed recollections of childhood experiences of maltreatment but *generally positive recollections* of childhood relationships with their abusive parent? Second, how do adults recall their childhood relationships with a non-abusive parent in homes where they were maltreated by another parent? Assuming that these two questions provide some level of heterogeneity, we turn to our third and central research question: do the long-term health consequences of child maltreatment differ depending on how respondents recall their childhood relationship with their parents? Throughout this article, we will refer to child maltreatment in a general sense, but specify particular physical and emotional forms when operationalizing the construct.

Theoretical Background

The life course perspective provides a general way to conceptualize how heterogeneous childhood experiences may influence health outcomes in middle- and older-adulthood (Elder, 1998; Kuh & Ben-Shlomo, 2004). Applying this perspective, the current article focuses on one aspect of the childhood context that could signify key points of divergence in the maltreatment-health association: general recollections of relational quality with parents. Do some adults remember their childhood relationship with a parent in positive terms despite harsh treatment from one or more parents? And do these adults fare better than those who recall negative overall relationships with one or both of their parents?

The scenario we address in this study—the possibility of good relations amidst maltreatment—is also informed by recent theorizing on family solidarity, specifically the idea that paradox plays a central role in family processes (Bengtson, Giarrusso, Mabry, & Silverstein, 2002). Briefly, family solidarity theory posits six distinct dimensions of family life that seek to explain how and to what extent the family unit integrates its members (affectual, consensual, functional, associational, structural, and normative solidarity). The overriding aspect of this theoretical framework most important for the current study is the fact that within each dimension, both positive and negative aspects of family relationships can co-exist; the presence of one does not imply the preclusion of the other. As Bengtson et al. explicate, “family relationships that are more negative on a particular dimension may consist of some people who are content to be more tenuously connected along that dimension, and thus, exhibit satisfaction with their family” (2002, p. 571). For example, mothers often

express feeling close to their adult daughters, but nevertheless report that they get on their nerves with some frequency (Pillemer & Suito, 2002). Simply put, conflict—exemplified in the current study as child maltreatment—is not “the same as the absence of affection” (Bengtson et al., 2002, p. 575). This conception of intergenerational relations views families as complex systems that embody both conflict and cohesion.

Attachment theory also has relevance for the life course consequences of childhood maltreatment. The theory emphasizes how infants and children form attachments to their parents out of the instinctual need for comfort and support (Bowlby, 1977). In brief, children develop internal mental representations about how to interact with others on the basis of these close relationships, and so early maltreatment disrupts the emotional bonds and produces an insecure attachment style (Styron & Janoff-Bulman, 1997). Insecure attachment appears to induce stress and heighten risk of physical disease (Maunder & Hunter, 2001). Attachment theory also suggests that people's internal representations of relationships can become ambivalent and complex over time, as human lives are a complex mix of continuities and discontinuities (Rutter, 1989; Sroufe & Pollock, 1986); early experiences can indeed leave a profound mark, altering subsequent life trajectories, but people re-interpret and re-negotiate familial ties over the course of their lives. For example, the ability to forgive parents—often with the help of therapy or informal support—can elicit healthier, more adaptive relational behavior among adult survivors of maltreatment (Egeland, Jacobvitz, & Sroufe, 1988; Main & Goldwyn, 1984). Forgiveness and other psychosocial turning points are critical developmental processes, though not ones that we can explicitly consider in the current study (see the discussion for further comment).

Overview of Prior Findings and Purpose of the Current Study

Several insights for this study can be drawn from prior findings on child maltreatment. First, the association between child maltreatment and adult health seems to be driven by a diversity of factors. Prior research emphasizes intervening links such as overeating (Greenfield & Marks, 2009), lowered personal control (Irving & Ferraro, 2006), substance abuse (Kendler et al., 2000), relational instability (Colman & Widom, 2004), and biological dysregulation (Shonkoff, Boyce, & McEwen, 2009). Springer (2009) provides a strong case for an overarching “multiple pathway model” whereby child maltreatment has diffuse effects on health through a wide array of causal mechanisms.

Second, many studies examining child maltreatment within the broader context of the family have used samples that are unrepresentative and right-censored (i.e., do not follow abused children into adulthood). The issue of temporal right censoring has limited the bulk of our knowledge to proximal effects of child maltreatment: studies primarily focus on the immediate impact that occurs during early to late adolescence (e.g., Chandy et al, 1997; Sagy & Dotan, 2001; Sunday et al., 2008). Studies that have examined maltreated children as adults tend to concentrate on the effects that become manifest in young adulthood (e.g., Chartier, Walker, & Naimark, 2010; Fergusson, Boden, & Horwood, 2008; Wright, Crawford, & Del Castillo, 2009). Given that many diseases have a long latency period, studying older adult populations is necessary in understanding the life course of child maltreatment. The limited studies that have focused on older populations have demonstrated

that the effects of child maltreatment do, indeed, carry through to middle-age and later life (e.g., Greenfield & Marks, 2009; Morton et al., 2012; Springer et al., 2007).

Another sampling limitation of some prior studies concerns non-representation. Most studies are comprised of small community samples (e.g., Rikhye et al., 2008; Sagy & Dotan, 2001; Wright et al., 2009). These smaller community studies are very useful but may not reflect the diversity of the general American population—a key factor when the objective is to investigate the role of *heterogeneous* familial contexts. Another common sampling technique that can produce non-representative studies is the use of child protective services (CPS) reports (e.g., Sunday et al., 2008). Although CPS reports have the advantage of a more objective lens via reporting by a third party, they can overrepresent the most severe cases of child maltreatment and systematically under-detect maltreatment from mothers (Haskett et al., 2006; Sedlack et al., 2010).

Finally, studies differ in their attention to various forms of maltreatment. Springer et al. (2007) and Sunday et al. (2008), for instance, focus on physical maltreatment, while others have focused solely on sexual maltreatment (e.g., Chandy et al., 1997) or emotional maltreatment (e.g., Wright et al., 2009). The current study follows prior research that combines multiple forms of maltreatment into a single variable (e.g., Rikhye et al., 2008; Greenfield & Marks, 2009), but we also distinguish between different domains of maltreatment (e.g., experiencing emotional but not physical maltreatment as distinct from experiencing both). These types of comparison can yield promising results that are helpful in understanding the complex relationship between child maltreatment and adult health.

Method

Data for the current study are drawn from the Midlife Development in the United States (MIDUS) study, a representative survey of American adults aged 25-74 initiated in 1995 (Brim, Ryff, & Kessler, 2004; details also available at <http://www.midus.wisc.edu/>). Information about childhood is, therefore, entirely retrospective in these data. Prospective designs would clearly be preferable for assessing the long-term health consequences of child maltreatment, but tracking individuals from early life until middle- and older-age is an exceedingly costly, time consuming, and difficult task. The MIDUS is an excellent data source for studying the topic, especially since we are unaware of any study featuring a comparably excellent sample design that contains well-validated measures of child physical and emotional maltreatment.

MIDUS respondents were selected by a random-digit-dialing procedure which produced a sampling frame from all English-speaking non-institutionalized adults aged 25-74 in the contiguous 48 American states. The response rate from these initial telephone interviews was 70%. Next, telephone participants received a follow-up questionnaire (86.6% response rate). The overall response rate was 61% ($.70 \times .87 = .61$), and the final sample size was 3,032 men and women who completed both the telephone and mail interview. The authors received approval for the protection of human subjects from a university Institutional Review Board for secondary analyses of the MIDUS data.

Measures

This study examines adult health, and we rely on three measures which encompass a broad spectrum of physical conditions. The first outcome variable is chronic conditions, a count variable of 29 total diseases that the respondent may have “experienced or been treated for” in the past 12 months: asthma, bronchitis, or emphysema; tuberculosis; other lung problems; arthritis, rheumatism, or other bone or joint diseases; sciatica, lumbago, or recurring backache; persistent skin trouble; thyroid disease; hay fever; recurring stomach trouble, indigestion, or diarrhea, urinary or bladder problems; being constipated all or most of the time; gall bladder trouble; persistent foot trouble; trouble with varicose veins requiring medical treatment; AIDS or HIV infection; lupus or other autoimmune disorders; persistent trouble with gums or mouth; persistent trouble with teeth; high blood pressure or hypertension; anxiety, depression, or other emotional disorder; alcohol or drug problems; migraine headaches; chronic sleeping problems; diabetes or high blood sugar; multiple sclerosis, epilepsy, or other neurological disorder; stroke; ulcer; hernia or rupture; piles or hemorrhoids. Unfortunately, the data do not allow us to determine how long the respondent experienced each illness or whether it was present during childhood. Two additional common ailments—heart trouble and cancer—were assessed in a different portion of the survey, in which respondents were asked whether they ever had either condition. This brings the total inventory of possible diseases to 31.

The second outcome variable is acute physical symptoms, which was measured using 9 items, with respondents indicating the frequency of occurrence for each symptom in the past 30 days: headaches, back aches, frequent sweating, irritability, hot flashes or flushes, aches or stiffness in the joints, troubling getting to or staying asleep, incontinence, and pain during sex. The response categories for each item range from not at all (coded 0) to almost every day (5). Scores on the 9 items were averaged so that if any symptom was irrelevant (e.g., participant did not have sexual partner in last 30 days), the respondent was not counted as missing when forming the index ($\alpha = .75$). Physical symptoms will be treated in the analyses as a continuous variable.

The final outcome variable is self-rated physical health. This variable was assessed by asking respondents “Using a scale from 0 to 10 where 0 means ‘the worst possible health’ and 10 means ‘the best possible health,’ how would you rate your health these days?”

Retrospective reports of child maltreatment in the MIDUS were modeled after the Conflict Tactics Scale (Straus, 1979). Respondents were asked how frequently both their (a) “mother, or the woman who raised you” and (b) “father, or the man who raised you” did a series of actions never, rarely, sometimes, or often towards them when they were growing up (no specific age was asked). Following the procedure of previous researchers (Irving & Ferraro, 2006; Springer, 2009), respondents who reported experiencing the emotional forms of maltreatment (being insulted or sworn at; sulked or refused to talk; did or said something spiteful; threatened to hit; smashed or kicked something in anger) “sometimes” or “often” were coded as having experiencing emotional maltreatment by their mother or father (depending on who perpetrated the maltreatment). A similar procedure was used to categorize physical maltreatment; respondents who reported being kicked, bit, or hit with a

fist; hit or tried to hit with something; beat up; choked; burned or scalded “sometimes” or “often” were considered victims of physical maltreatment by their mother or father. These items denote the “severe” forms of physical maltreatment assessed by the CTS; less harsh forms of physical contact (e.g., pushed, slapped) were included in the survey but not considered maltreatment for the purposes of the current study.

We examined alternative ways to use the maltreatment information, then developed a set of categorical variables for the bulk of the analysis: (1) no maltreatment by parent; (2) emotional maltreatment only by parent; (3) emotional and physical maltreatment by parent. These variables were created for each parent separately. Very few cases were physically maltreated in the absence of emotional maltreatment (23 in the case of mothers, 24 in the case of fathers), so in these rare instances we counted the respondent as fitting the more severe profile (emotional and physical maltreatment). Moreover, physical maltreatment most often occurs in tandem with emotional maltreatment.

Prior studies have made use of the CTS maltreatment measures in various forms (Greenfield & Marks, 2009, 2010; Irving & Ferraro, 2006), but we expand on both physical and emotional maltreatment by incorporating another item asked in the questionnaire segment of the survey. A central concern of this study is to differentiate the experience of maltreatment according to general recollections of the parent-child relationship, so we integrate the following question into our classification of maltreatment to generate our main analytic variables: “How would you rate your relationship with your mother [father] (or the woman [man] who raised you) during the years you were growing up?” Using this information, we differentiated respondents into a number of categories: (1) no maltreatment by either parent, positive relationship (signified by “good”, “very good”, or “excellent” relationship) with both (reference group in models predicting adult health); (2) no maltreatment by either parent, negative relationship with at least one parent (negative relationship signified by report of “fair” or “poor” relationship); (3) only emotional maltreatment by either parent, positive relationship with both; (4) only emotional maltreatment by either parent, negative relationship with at least one parent; (5) physical and emotional maltreatment by either parent, positive relationship with both; (6) physical and emotional maltreatment by either parent, negative relationship with at least one. Relationship quality was divided into positive and negative on the basis of existing research splitting subjective health into positive (i.e., excellent to good) and non-positive (i.e., fair or poor) categories (e.g., Kawachi & Kennedy, 1999). Initial analyses demonstrated that there was insufficient statistical power to make more fine-grained distinctions in the data (e.g., to distinguish respondents reporting negative relationships with *both* parents within the “at least one” classification for each profile of maltreatment experience). Respondents who were not able to identify a father/mother or a man/woman who raised them and those who did not report valid scores for the maltreatment and relationship questions were counted as missing. This results in 12.5% to 14.5% missing data for each of the six categorical variables mentioned above.

This study adjusts for several demographic covariates which may be associated with childhood experiences and adult health. First, we include a dummy variable for race (1=nonwhite, 0=white) to account for health variability between U.S. majority and minority groups. Second, male and female children may interact differently with their mothers and

fathers, so we include a dummy variable for gender (1=female, 0=male). Third, older adults are likely to have more diseases and more physical symptoms; older adults in the MIDUS sample also come from earlier birth cohorts in which norms about family life may differ from those of more recent birth cohorts. For these reasons, we include a continuous variable for age. Finally, high educational attainment predicts better health and is more likely attained in the context of a supportive childhood family environment (Davis-Kean, 2005). Therefore, we include an ordinal variable for highest degree completed (ranging from 1, no school/some grade school to 12, professional degree). Preliminary analyses considered proxy variables for childhood socioeconomic status and household instability as additional controls, but these indicators were non-significant in the regression models and were removed for the final analyses.

Analysis

The analyses proceed in several stages. First, we present descriptive statistics for the variables used in this study (Table 1). To address our first two research questions (i.e., examining the association between reported maltreatment and parental relationships), we present two tables of cross-tabulations. Table 2 shows how recalled respondent-parent relationships vary according to whether the parent was remembered as maltreating the respondent, while Table 3 broadens the analysis to consider evaluations of both parents under different conditions of maltreatment.

Next, we assess our third research question which concerns the association between recalled parental maltreatment/relationships and adult health using three multivariate regressions (Tables 4-6). Each equation adjusts for covariates described above. The first health condition, *chronic conditions*, is a count variable so we use negative binomial regression rather than linear regression (Long, 1997). Negative binomial regression is based on a Poisson distribution but accounts for overdispersion (variance exceeding the distribution mean). *Physical symptoms* is a continuous variable approximating a normal distribution, so we employ ordinary least squares regression. Finally, *self-rated health* scored on a 0-10 scale and approximates a normal distribution; this outcome is likewise predicted with ordinary least squares regression. All regression models use post-stratification weights to ensure generalizability to the non-institutionalized American adult population and multiple imputation to account for missing data (Royston, 2005).

Results

Unweighted statistics for the sample are reported in Table 1. This table indicates that the average age of the MIDUS sample is about 47 (proportion of adults in 10-year bands is also included in the table), the sample is almost evenly split between men and women, and 12% of MIDUS respondents identify as non-white. Of the 348 respondents who identified as non-white, 201 were Black, 22 were Native American, 22 were Asian or Pacific Islander, 80 were other, and 23 reported being multiracial. The distribution of racial groups indicates an underrepresentation of several categories, such as Black adults, so the sample will be weighted in the analyses predicting health in order to produce estimates that are generalizable to the American population. The average MIDUS participant has some college

education (category 6 is 1-2 years of college, no degree, while category 7 is 3 or more years of college, no degree). Regarding the central study variables, MIDUS respondents have as many as 28 chronic conditions, but the average score is only about 2¾ diseases. Twenty-one percent of the sample reported none of the chronic illnesses. On average, MIDUS participants report physical symptoms occurring “once a month” (i.e., a score of “1”), and 6% indicated that they never dealt with any of the symptoms. Finally, 7% and 9% of study participants faced physical maltreatment from their mother and father, respectively, “often” or “sometimes.” Emotional maltreatment was more common; nearly ¼ of the participants reported such maltreatment from their mothers, and 28% reported it from their fathers.

Table 2 elaborates on the various categories of recollected maltreatment and parent-child relationships, showing the full range of responses garnered from the parental relationship variable. All rows in Table 2 sum to 100%, meaning that the percentages can be interpreted as the quality of the recalled relationship within each classification of maltreatment. Among those who did not experience regular maltreatment (either physical or emotional) from their mother, favorable recollections of the relationship tended to predominate: the modal response was “excellent”, and < 1% said the relationship was “poor.” MIDUS respondents were not quite as positive about paternal relationships, but these recollected reports, too, tended to be overwhelmingly positive in the absence of physical and emotional maltreatment: the modal category was “very good” for non-abusive fathers, while only 9% and 2% recalled “fair” or “poor” relationships, respectively. Somewhat surprising, however, is the frequency of positive relationship responses even in the presence of regular maltreatment. Among respondents who faced only emotional maltreatment (“often” or “sometimes”) by their mother, over 1 in 3 still endorsed the relationship as “excellent” or “very good”, and 30% said that the relationship was “good.” For respondents who were both emotionally and physically maltreated by their mother, 26% nevertheless saw the relationship as “good” and only slightly more than half characterized it as “fair” or “poor.”

Among those maltreated by their father, recollections were also not unanimously negative. Nearly 10% of respondents that were emotionally maltreated only said they had an “excellent” relationship with their father, followed by over 17% reporting “very good” and 31% who selected “good.” About 34% of those who were both physically and emotionally abused nevertheless indicated that the relationship with their father was no worse than “good.”

Table 2 examines the overlap between maltreatment and relationship quality for one parent at a time, but Table 3 combines the reports across both parents to enable an investigation of within-household heterogeneity. Table 3 indicates that even though evaluations of parental relationships are distributed across the different levels among abusive parents, non-abusive parents are evaluated far more favorably than the abusive parent. The important point to be gleaned from Table 3, however, is the considerable heterogeneity within each profile of parental maltreatment—it is not uncommon for adults from abusive households to remember fair or poor relationships with either of their parents, but neither is it unusual for them to recall one or both of the relationships as good, very good, or even excellent.

Given the variability with which American adults construe abusive parental relationships in their childhood households, what are the implications for physical health? Are the long-term consequences of maltreatment more pronounced among those who recall negative relations with their parents? Tables 4-6 provide a series of multiple regression equations to investigate this question. The models include dummy variables to differentiate respondents who were emotionally maltreated by at least one parent and who saw at least one of the relationships as negative (fair/poor) from those who saw both relationships as positive (good/very good/excellent). We also include a dummy variable to denote participants who did not experience maltreatment but nevertheless reported a negative relationship with at least one of their parents. The reference group, therefore, is *no reported experience* of parental maltreatment and positive relationships with both parents.

A basic test presented in Tables 4-6 is whether, net of demographic covariates, any or all of the four dummy variable coefficients indicating maltreatment (emotional maltreatment by either parent, both forms of maltreatment by either parent) differ significantly from the reference group. A significant effect for any of these dummy variables testifies to the long-term health consequences of maltreatment. The more crucial test, however, is whether the association between parental maltreatment and health is contingent on the recalled parental relationships. To test the hypothesis that physical maltreatment is at its worst when it is coupled with unfavorable parental relationships, we will statistically compare the dummy variables for emotional maltreatment only (positive relationship with both vs. negative relationship with at least one) and for both forms of maltreatment (same distinction) with a Wald test (for negative binomial regression) and F-test (for linear regression). These tests are shown with the “c” and “d” superscripts in Tables 4-6. The results of Table 4 corroborate recent claims that child maltreatment is a “life-course social determinant of adult health” (Greenfield 2010, p. 53). For chronic conditions, three of the four variables capturing maltreatment were positively associated with a higher count of illnesses. That is, respondents who were emotionally maltreated by either parent and had a negative relationship with at least one of them and *all* respondents experiencing physical and emotional maltreatment (regardless of the relationship recollections) differed significantly from adults who were not maltreated and had a positive relationship with both parents (significant effects are represented by asterisks).

Nevertheless, the main focus of this analysis is in the differentiated categories which recognize heterogeneity in the maltreatment experience. These contrasts are conducted with Wald and F-tests and indicated by superscripts “c” and “d” in the table. For both comparisons, the negative health effects of maltreatment are indeed most pronounced for respondents who reported negative parental relationships (using .10 as the critical value). Starting with the *emotional maltreatment only* category, having a negative relationship with at least one parent ($b = .39, p < .001$) is significantly different from having a positive relationship with both parents ($b = .12, p > .05$). Moving down to the rows that signify *both forms of maltreatment*, the health effects of maltreatment again differ by relationship evaluation. The coefficient associated with having a negative relationship with at least one parent ($b = .51, p < .001$) is twice as large as the coefficient associated with having a positive relationship with both parents ($b = .25, p < .05$).

Table 5 presents a linear regression model with physical symptoms as the dependent variable. For this health outcome, varieties of maltreated participants (those seeing both parental relationships as positive and those seeing at least one as negative) differed significantly from non-maltreated adults with positive parental relationships. This was true concerning emotional maltreatment only, as well as physical and emotional maltreatment. Despite this level of consistency, there was still a divergent pattern of effects for victims of emotional maltreatment only depending on whether the respondent saw the relationships as positive or whether at least one of them was negative. Specifically, the coefficient size was about twice as large for the latter group than it was for the former: $b = .37, p < .001$ for emotional maltreatment only, negative relationship vs. $b = .19, p < .001$. The difference between the coefficients was significant, as indicated by the F-statistics displayed superscript “c” ($p = .02$). In contrast, the effects of both forms of maltreatment were not significantly different depending on whether the respondent had a positive relationship with both parents or had a negative relationship with at least one of them ($p = .37$).

The final table presents regression results for self-rated health. As with models for the other two outcomes, the association between maltreatment and health is most pronounced when coupled with negative parental relationships. Respondents reporting maltreatment and having a negative parental relationship do not differ significantly in self-rated health from the reference group, but neither do adults indicating emotional maltreatment but positive relationships or those recounting both forms of maltreatment but positive relationships. Respondents who reported emotional maltreatment and who recall a negative relationship with at least one parent, however, have health scores over half a unit lower than those in the reference group ($p < .001$). Such respondents also differed significantly from their counterparts who endorsed positive parental relationships, as indicated by the F-test ($p = .02$). A similar result emerged for the case of adults who faced both forms of maltreatment and had negative parental relationships. These adults differed significantly from respondents with positive relationships and no memory of maltreatment ($p < .001$), as well as from those who were maltreated physically and emotionally yet reported positive relationships ($p = .03$).

Sensitivity Analyses

One potential limitation of the MIDUS sample is that it includes adults of a wide age range (25-74 years old). It is possible that this introduces some bias in the reporting of childhood events and the conclusions we draw about health. For instance, if “time heals”, then we may expect to see a systematic pattern in which older respondents (for whom more time has elapsed since childhood) rate parental relationships more favorably and are less influenced by maltreatment. We considered this possibility by estimating a series of models predicting retrospective relationships with mother and father (the variable represented across the top row in Table 2). Predictor variables included age, maltreatment (physical and emotional) by mother/father, an age x maltreatment interaction term, and the additional demographic covariates presented in Tables 4-6 (nonwhite, female, and education). When predicting recalled relationship with mother, maltreatment—both physical and emotional—was associated with a worse overall relationship, whereas older age was associated with a better relationship. The interaction between age and maltreatment was also non-significant,

suggesting that maltreated respondents further removed from childhood were no more likely to downgrade their negative maternal evaluations than were those who had experienced the maltreatment relatively recently. For fathers, there is some evidence, however, that with increasing age, physical (but not emotional) maltreatment has less influence on recollected evaluations. The physical maltreatment x age interaction was significant, though the emotional maltreatment x age interaction was not. Together, these findings demonstrate the importance of controlling for age in Tables 4-6.

We also re-analyzed the models in Tables 4-6 with age subsamples as a check on the robustness of our findings. Upon dividing the MIDUS respondents into two groups (aged < 50 and ≥ 50), we found that the maltreated/negative relationship combination remained worse for health than the maltreated/positive relationship, regardless of whether the subjects were young adults or middle-age and older adults. This instills confidence in our main conclusions; despite the fact that age influences the way that people generally remember their parents, those who view the overall relationship with an offending parent negatively bear a stronger health burden than those who were maltreated in the context of an overall perceived “positive” relationship. Finally, we considered whether several other variables could be confounding the maltreatment-health associations reported in Tables 4-6. One possibility is that respondents high in neuroticism could be especially likely to remember maltreatment experiences from childhood and also to be in relatively poor health. We used a 4-item measure of neuroticism available in the MIDUS data ($\alpha = .74$) to investigate this possibility. Results were largely consistent with the main findings presented above, though some differences emerged in the analysis of acute physical symptoms. Specifically, differences between maltreatment categories became more muted, and both F-tests became non-significant. All four categories of maltreatment were associated with the experience of more symptoms (relative to the reference group). It is worth noting that acute physical conditions involve ailments that have clear links to psychosomatic illness (e.g., irritability, trouble getting to and staying asleep, headaches), and so it is understandable that accounting for neuroticism alters the findings somewhat for this particular outcome.

Another possible confounding factor is childhood health, which could precipitate incidents of parental frustration and maltreatment. Unfortunately, the MIDUS data only contain questions about physical and mental health in adolescence (asking whether each form of health was excellent, very good, good, fair, or poor). When we include both measures in the three regression models from Tables 4-6, neither variable (physical or mental health age 16) was significantly associated with any of the three outcomes. Substantive conclusions about maltreatment and perceived relationships remained unchanged.

Though controlling for these supplementary variables is somewhat informative, both adolescent health and adult neuroticism are shaped by child maltreatment (Fryers & Brugha, 2013; Hussey, Chang, & Kotch, 2006) and likely lie on the causal pathway in explaining adult health. This would disqualify them from being true confounding variables, and so the findings from Tables 4-6 are presented as the preferred analyses. Nevertheless, it is important to note that the results are most robust for chronic conditions and for self-rated health, and somewhat less robust for the analysis of acute physical symptoms.

Discussion

The purpose of this study was to better understand diversity in the long-term health effects of child maltreatment. Though physical and emotional maltreatment is associated with adult health and disease (Greenfield, 2010), little research has focused on the heterogeneity of the perceived maltreatment experience and whether this source of variation predicts different long-term health consequences. An underlying premise was that child maltreatment does not determine the full scope of the parent-child relationship. Indeed, drawing from the family solidarity model, we assumed that family relations are often a complex mix of affirmation and adversity, that this deep sense of incongruity is “a phenomenological reality, a universal human experience” (Bengtson et al., 2002, p. 568). Whereas much of the family solidarity literature has focused on either functional aspects of family solidarity or the co-existence of positive and negative within family solidarity, we extended this literature by also examining the magnified consequences of negative experiences coinciding with negative familial relations.

Findings from the Midlife Development in the United States (MIDUS) study support Bengtson and associates' model of family solidarity by demonstrating that maltreatment does not always negatively impact certain dimensions of family solidarity; some individuals can experience maltreatment and still report a satisfactory relationship with either or both parents. Most respondents who recalled maltreatment from one parent perceived the relationship with their non-perpetrating parent as excellent or very good, and a surprising proportion of maltreated respondents nevertheless report favorable childhood relationships with their offending parent. The surprising prevalence of this blend—sanguine summary judgment amidst episodes of maltreatment—suggests that people experience and interpret physical and emotional insults in diverse ways and that many contextual factors affect the phenomenology of maltreatment. Bleak parental evaluation would seem to be the straightforward corollary to recollected maltreatment, but, as suggested by the family solidarity model, families are complex and dynamic entities whose biographical imprint often forms untidy, complicated storylines.

The importance of appreciating this heterogeneity is demonstrated in the analysis of adult health. Our findings clearly indicate that physical and emotional maltreatment has the potential for long-term adverse health effects, but that the consequences are compounded in situations where maltreatment was accompanied by negative parental relationships. This pattern was demonstrated across three measures of health, including chronic conditions, acute physical conditions, and self-rated health. Across these different outcomes, five of the six relevant contrast tests indicated that adults maltreated as children in the context of negative parental relationships fared worse than those maltreated in a more benign relational context. This suggests that the proposed divergence in long-term health consequences is not an artifact of a single arbitrarily-selected condition. That being said, results were most pronounced for chronic disease and self-rated health, both in the findings reported in Tables 4-6 and in supplementary analyses.

The current study, though offering a more nuanced perspective than many retrospective life course studies of maltreatment and health (see Greenfield, 2010), requires several

considerations in light of its design. First, we were unable to assess mechanisms explaining the heterogeneity in health effects. There are several potential explanations for our findings, none of which we can definitively favor. One possibility is that maltreated children who endured generally negative parental relationships tend to remain entangled in a strained parent-child relationship or tend to be in a position of stressful estrangement from their parent(s). This account, life course relational continuity (see Rossi & Rossi, 1990), pinpoints ongoing relational tension as a basic stressor that can harm adult health.

Another potential explanation is forgiveness and reconciliation. Perhaps adults who, at some point in their lives, have been able to salvage and restore their relationship with a maltreating parent look back upon their overall relationship more favorably than those who remain in enmity with their offending parent. Gaining closure from past injustice and offering forgiveness, in turn, appears to be health-protective (Worthington & Scherer, 2004), and so this account explains heterogeneity in health consequences by pointing to the buffering effects of reconciliation which may partially offset earlier trauma. These two mechanisms, life course relational continuity or forgiveness, are not mutually exclusive, and there may be other processes working alongside or in place of these possible intervening effects. For instance, some respondents may have interpreted harsh parental treatment as an act of severe punishment ultimately intended to help, not hurt them. These respondents, besides giving their parents a largely positive mark, may have not have experienced as much anger or psychological damage as respondents viewing their parent as flatly abusive. Understanding these potential pathways between childhood maltreatment and adult health, however, will require more focused survey data than were available in the broad-based MIDUS study. Large-scale studies with targeted screening and recruitment of maltreatment victims would be ideal for examining these nuanced intervening variables and testing their relative importance. Such a design would also allow the exploration of important sub-group differences, including gender, racial, and age.

Pertaining to clinical practice, helping victims of childhood maltreatment sort through their experience is clearly important from a therapeutic perspective, but it also may have implications for the treatment of physical health conditions (see Felitti, 2002). Primary care physicians should be attuned to the consequences of early parental maltreatment and be ready to refer patients to clinicians with expertise in family dynamics and attachment theory. Communication between both sets of specialists is critical for halting the long-term health consequences of early maltreatment.

A second limitation of the present study is that it relied upon retrospective data to gain information about respondents' early years. Both key childhood reports were obtained by asking adults to look back in time to remember particular events (maltreatment) and reconstruct the quality of their parent-child relationship. Other research, including the Adverse Childhood Experience (ACE) Study, have attempted to deal with this design limitation by using well-validated retrospective measures of maltreatment that ask about concrete behaviors (e.g., choking, cursing) rather than value-laden terms such as "abuse" or "maltreatment" (Felitti et al., 1998). Similar to the ACE study, the MIDUS used items drawn from the Conflict Tactics Scale with this issue in mind (Straus, 1979), though it is

important to recognize that the CTS was initially developed to assess violence in partner relationships, not parent-child relationships.

One of the recommendations for retrospective data offered by Hardt and Rutter (2004) is to use *specific events or experiences* recollected from childhood rather than trusting general interpretations of the past. Our use of the parent-child relationship question, however, may seem to directly contradict this advice, as the measure is indeed a broad-strokes account of early life and not an objective assessment of a singular incident. Over time, general evaluations about parent-child relationships can shift, so it is impossible to know the extent to which adult ratings would match up with childhood ones or even the direction of the bias over the life span (worse than childhood rating vs. better than childhood rating). Nevertheless, the findings from this study suggest that the health consequences in adulthood differ according to these reports, regardless of whether they capture reality or are reconstructed perspectives formed over time. The optimal study design for our research questions would be to draw a large population sample of children and prospectively track them on into middle- and late-adulthood. This approach would best enable us to draw links between reports of maltreatment, adult health, and the potential moderating factors mentioned above.

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References

- Bengtson VL, Giarrusso R, Mabry JB, Silverstein M. Solidarity, conflict, and ambivalence: Complementary or competing perspectives on intergenerational relationships. *Journal of Marriage and Family*. 2002; 64:568–576.
- Bowlby J. The making and breaking of affectional bonds: I. aetiology and psychopathology in the light of attachment theory. *British Journal of Psychiatry*. 1977; 130:201–210. [PubMed: 843768]
- The MIDUS national survey: An overview. In: Brim, OG.; Ryff, CD.; Kessler, RC., editors; Brim, OG.; Ryff, CD.; Kessler, RC., editors. *How healthy are we? A national study of well-being at midlife*. Chicago: University of Chicago Press; 2004. p. 1-34.
- Chandy JM, Blum RW, Resnick MD. Sexually abused male adolescents: How vulnerable are they? *Journal of Child Sexual Abuse*. 1997; 6:1–16.
- Chartier MJ, Walker JR, Naimark J. Separate and cumulative effects of adverse childhood experiences in predicting adult health and health care utilization. *Child Abuse & Neglect*. 2010; 34:454–464. [PubMed: 20409586]
- Colman RA, Widom CS. Childhood abuse and neglect and adult intimate relationships: A prospective study. *Child Abuse & Neglect*. 2004; 28:1133–1151. [PubMed: 15567020]
- Cyr C, Michel G, Dumais M. Child maltreatment as a global phenomenon: From trauma to prevention. *International Journal of Psychology*. 2013; 48:141–148. [PubMed: 23597013]
- Davis-Kean PE. The influence of parent education and family income on child achievement: The indirect role of parental expectations and the home environment. *Journal of Family Psychology*. 2005; 19:294–304. [PubMed: 15982107]
- Egeland B, Jacobvitz D, Sroufe LA. Breaking the cycle of abuse. *Child Development*. 1988; 59:1080–1088. [PubMed: 3168615]

- Elder GH Jr. The life course as developmental theory. *Child Development*. 1998; 69:1–12. [PubMed: 9499552]
- Farber, EA.; Egeland, B. Invulnerability among abused and neglected children. In: Anthony, EJ.; Cohler, BJ., editors. *The invulnerable child*. New York: Guilford; 1987. p. 253-289.
- Felitti VJ. The relation between adverse childhood experiences and adult health: Turning gold into lead. *Permanente Journal*. 2002; 6:44–47.
- Felitti VJ, Anda RF, Nordenburg D, Williamson DF, Spitz AM, Marks JS. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. *American Journal of Preventive Medicine*. 1998; 14(4):245–258. [PubMed: 9635069]
- Fergusson DM, Boden JM, Horwood JL. Exposure to childhood sexual and physical abuse and adjustment in early adulthood. *Child Abuse & Neglect*. 2008; 32:607–619. [PubMed: 18565580]
- Fryers T, Brugha T. Childhood determinants of adult psychiatric disorder. *Clinical Practice and Epidemiology in Mental Health*. 2013; 9:1–50. [PubMed: 23539489]
- Greenfield EA. Child abuse as a life-course social determinant of adult health. *Maturitas*. 2010; 66:51–55. [PubMed: 20207088]
- Greenfield EA, Marks NF. Violence from parents in childhood and obesity in adulthood: Using food in response to stress as a mediator of risk. *Social Science & Medicine*. 2009; 68:791–798. [PubMed: 19185965]
- Greenfield EA, Marks NF. Identifying experiences of physical and psychological violence in childhood that jeopardize mental health in adulthood. *Child Abuse & Neglect*. 2010; 34:161–171. [PubMed: 20223518]
- Handel, G.; Whitchurch, GG. *The psychosocial interior of the family*. 4th. Hawthorne, NY: Aldine de Gruyter; 1994.
- Hardt J, Rutter M. Validity of adult retrospective reports of adverse childhood experiences: Review of the evidence. *Journal of Childhood Psychology and Psychiatry*. 2004; 45:260–273.
- Haskett ME, Nears K, Ward CS, McPherson A. Diversity in adjustment of maltreated children: Factors associated with resilient functioning. *Clinical Psychology Review*. 2006; 26:796–812. [PubMed: 16797807]
- Haskett ME, Scott SS, Ward CS. Subgroups of physically abusive parents based on cluster analysis of parent behavior and affect. *American Journal of Orthopsychiatry*. 2004; 74:436–447. [PubMed: 15554805]
- Hussey JM, Chang JJ, Kotch JB. Child maltreatment in the United States: Prevalence, risk factors, and adolescent health consequences. *Pediatrics*. 2006; 118:933–942. [PubMed: 16950983]
- Irving SM, Ferraro KF. Reports of abusive experiences during childhood and adult health ratings: Personal control as a pathway? *Journal of Aging and Health*. 2006; 18:458–485. [PubMed: 16648396]
- Kawachi I, Kennedy BP. Income inequality and health: Pathways and mechanisms. *Health Affairs*. 1999; 34:215–227.
- Kendler KS, Bulik CM, Silberg J, Hettema JM, Myers J, Prescott CA. Childhood sexual abuse and adult psychiatric and substance use disorders in women: An epidemiological and co-twin control analysis. *Archives of General Psychiatry*. 2000; 57:953–959. [PubMed: 11015813]
- Kuh, D.; Ben-Shlomo, Y. *A life course approach to chronic disease epidemiology*. 2nd. New York: Oxford; 2004.
- Long, JS. *Regression models for categorical and limited dependent variables*. Thousand Oaks, CA: Sage Publications; 1997.
- Main M, Goldwyn R. Predicting rejection of her infant from mother's representation of her own experience: Implications for the abused-abusing intergenerational cycle. *Child Abuse & Neglect*. 1984; 8:203–217. [PubMed: 6539642]
- Maunder RG, Hunter JJ. Attachment and psychosomatic medicine: Developmental contributions to stress and disease. *Psychosomatic Medicine*. 2001; 63:556–567. [PubMed: 11485109]
- Morton PM, Schafer MH, Ferraro KF. Does childhood misfortune increase cancer risk in adulthood? *Journal of Aging and Health*. 2012; 24:948–984. [PubMed: 22764155]

- Perkins DF, Jones KR. Risk behaviors and resiliency within physically abused adolescents. *Child Abuse & Neglect*. 2004; 28:547–563. [PubMed: 15159069]
- Pillemer K, Sutor JJ. Explaining mothers' ambivalence toward their adult children. *Journal of Marriage and Family*. 2002; 64:602–613.
- Rikhye K, Tyrka AR, Kelly MM, Gagne GG Jr, Mello AF, Mello MF, Carpenter LL. Interplay between childhood maltreatment, parental bonding, and gender effects: Impact on quality of life. *Child Abuse & Neglect*. 2008; 32:19–34. [PubMed: 18082260]
- Rutter M. Pathways from childhood to adult life. *Journal of Child Psychology and Psychiatry*. 1989; 30:23–51. [PubMed: 2647779]
- Rossi, AS.; Rossi, PH. *Of human bonding: Parent-child relations across the life course*. Hawthorne, NY: Aldine De Gruyter; 1990.
- Royston P. Multiple imputation of missing values: Update. *The Stata Journal*. 2005; 5:1–14.
- Sagy S, Dotan N. Coping resources of maltreated children in the family: A salutogenic approach. *Child Abuse & Neglect*. 2001; 25:1463–1480. [PubMed: 11766011]
- Sedlak, AJ.; Mettenberg, J.; Basena, M.; Petta, I.; McPherson, K.; Greene, A.; Li, S. *Fourth National Incidence Study of Child Abuse and Neglect (NIS-4): Report to Congress, Executive Summary*. Washington, DC: U.S. Department of Health and Human Services, Administration for Children and Families; 2010.
- Shonkoff JP, Boyce WT, McEwen BS. Neuroscience, molecular biology, and the childhood roots of health disparities: Building a new framework for health promotion and disease prevention. *The Journal of the American Medical Association*. 2009; 301:2252–2259.
- Springer KW. Childhood physical abuse and midlife physical health: Testing a multipathway life course model. *Social Science & Medicine*. 2009; 69:138–146. [PubMed: 19446943]
- Springer KW, Sheridan J, Kuo D, Carnes M. Long-term physical and mental health consequences of childhood physical abuse: Results from a large population-based sample of men and women. *Child Abuse & Neglect*. 2007; 31:517–530. [PubMed: 17532465]
- Sroufe, LA.; Pollock, CB. Attachment and the construction of relationships. In: Hartup, W.; Rubin, Z., editors. *Relationships and development*. Hillsdale, NJ: Erlbaum; 1986. p. 51-72.
- Straus MA. Measuring intrafamily conflict and violence: The Conflict Tactics (CT) scales. *Journal of Marriage and Family*. 1979; 41:75–88.
- Styron T, Janoff-Bulman R. Childhood attachment and abuse: Long-term effects on adult attachment, depression, and conflict resolution. *Child Abuse & Neglect*. 1997; 21:1015–1023. [PubMed: 9330802]
- Sunday S, Labruna V, Kaplan S, Pelcovitz D, Newman J, Salzinger S. Physical abuse during adolescence: Gender differences in the adolescents' perceptions of family functioning and parenting. *Child Abuse & Neglect*. 2008; 32:5–18. [PubMed: 18082259]
- Wind TW, Silvern L. Parenting and family stress as mediators of the long-term effects of child abuse. *Child Abuse & Neglect*. 1994; 18:439–453. [PubMed: 8032974]
- Wright MO, Crawford E, Del Castillo D. Childhood emotional maltreatment and later psychological distress among college students: The mediating role of maladaptive schemas. *Child Abuse & Neglect*. 2009; 33:59–68. [PubMed: 19167067]
- Worthington EL, Scherer M. Forgiveness is an emotion-focused coping strategy that can reduce health risks and promote health resilience: theory, review, and hypotheses. *Psychology & Health*. 2004; 19:385–405.

Table 1
Descriptive statistics of the study sample (MIDUS, 1995)

Variable	Range	Mean	S.D.	Observations
Chronic conditions	0-28	2.74	2.83	3032
0 conditions		0.21		
Physical symptoms	0-5	1.05	0.84	3018
0 symptoms		0.06		
Self-rated health	0-10	7.35		3015
Mother physical abuse	0-1	0.07		2864
Father physical abuse	0-1	0.09		2742
Mother emotional abuse	0-1	0.23		2851
Father emotional abuse	0-1	0.28		2745
Relationship with mother	1-5	3.83	1.09	2982
poor		0.03		
fair		0.10		
good		0.22		
very good		0.32		
excellent		0.34		
Relationship with father	1-5	3.45	1.18	2849
poor		0.07		
fair		0.15		
good		0.27		
very good		0.29		
excellent		0.23		
Age	20-74	47.06	13.12	3030
20-29		0.11		
30-39		0.24		
40-49		0.25		
50-59		0.20		
60-69		0.14		
70+		0.06		
Female	0-1	.51		3032
Non-white	0-1	.12		2944
Black		0.07		
Native-American		0.01		
Asian/Pacific Islander		0.01		
other race		0.03		
multiracial		0.01		
Education	1-12	6.71	2.47	3030
some grade school		0.01		
junior high school		0.02		
some high school		0.07		

Variable	Range	Mean	S.D.	Observations
GED		0.02		
graduated high school		0.28		
1-2 years college, no degree		0.19		
3+ years college, no degree		0.05		
2-year college or vocational degree		0.07		
bachelor's degree		0.17		
some graduate school, no degree		0.03		
master's degree		0.07		
professional degree		0.03		

S.D. = standard deviation. Percentages within categories (e.g., relationship with mom, relationship with dad, and age) may not sum to 100% due to rounding.

Table 2
Recalled evaluation of parental relationship by retrospective report of child maltreatment (MIDUS, 1995)

	Childhood relationship with parent					Total
	Excellent	Very good	Good	Fair	Poor	
<i>Mother</i>						
No maltreatment	39.85% (844)	35.03% (742)	19.05% (413)	5.29% (112)	0.33% (7)	100% (2118)
Emotional maltreatment only	13.71% (65)	21.52% (102)	29.96% (142)	28.27% (134)	6.54% (31)	100% (474)
Emotional and physical maltreatment	6.98% (12)	13.95% (24)	26.16% (45)	30.23% (52)	22.67% (39)	100% (172)
<i>Father</i>						
No maltreatment	27.90% (527)	33.72% (637)	27.05% (511)	9.37% (177)	1.96% (175)	100% (1889)
Emotional maltreatment only	9.57% (51)	17.07% (91)	30.58% (163)	28.89% (154)	13.88% (74)	100% (533)
Emotional and physical maltreatment	2.44% (5)	9.27% (19)	21.95% (45)	36.59% (75)	29.76 (61)	100% (205)

Number in parentheses corresponds to number of cases in each category.

Table 3
Descriptive table showing variation in maltreatment and relationship quality (MIDUS, 1995)

Perpetrator Relationship	Relationship with Perpetrating Parent	Relationship with Non-Perpetrating parent
Emotional maltreatment only by mother, no maltreatment by father	Excellent = 12% (23) Very good = 20% (37) Good = 27% (50) Fair = 33% (61) Poor = 9% (16)	Excellent = 23% (44) Very good = 29% (56) Good = 31% (58) Fair = 13% (25) Poor = 4% (7)
Emotional and physical maltreatment by mother, no maltreatment by father	Excellent = 6% (4) Very good = 15% (10) Good = 25% (16) Fair = 37% (24) Poor = 17% (11)	Excellent = 25% (16) Very good = 43% (28) Good = 17% (11) Fair = 8% (5) Poor = 8% (5)
Emotional maltreatment only by father, no maltreatment by mother	Excellent = 9% (26) Very good = 17% (52) Good = 28% (85) Fair = 31% (93) Poor = 16% (48)	Excellent = 40% (124) Very good = 33% (102) Good = 20% (63) Fair = 6% (19) Poor = .5% (5)
Emotional and physical maltreatment by father, no maltreatment by mother	Excellent = 5% (5) Very good = 9% (8) Good = 26% (24) Fair = 35% (33) Poor = 25% (23)	Excellent = 41% (38) Very good = 39% (36) Good = 15% (14) Fair = 4% (4) Poor = 0% (0)

Number in parentheses is the raw number. Percentages may not sum to 100% within each category due to rounding.

Table 4
Negative binomial regression parameter estimates, association of retrospective reports of childhood maltreatment with adult chronic conditions (MIDUS)

	Chronic conditions (NB regression)
No maltreatment either parent, positive relationship with both	reference
No maltreatment either parent, negative relationship with at least one	0.14 ^a (0.09) ^b
Emotional maltreatment only by either parent, positive relationship with both	0.12 ^c (0.07)
Emotional maltreatment only by either parent, negative relationship with at least one	0.39 ^{***c} (0.09)
Both forms of maltreatment by either parent, positive relationship with both	0.25 ^{*d} (0.11)
Both forms of maltreatment by either parent, negative relationship with at least one	0.51 ^{***d} (0.10)
Age	0.02 ^{***} (0.002)
Female	0.25 ^{***} (0.05)
Nonwhite	-0.10 (0.11)
Education	-0.04 ^{***} (0.01)
Constant	0.25 (0.16)
-2ll	6529.68
Observations	3032

* p < .05;

** p < .01;

*** p < .001 in comparison to reference group (no maltreatment reported)

^a Unstandardized coefficient

^b Standard error

^c p value for comparison of coefficient difference = .001; ($F(1, 2995) = 10.26$)

^d p value for comparison of coefficient difference = .063; ($F(1, 2995) = 3.45$)

Both forms of maltreatment includes emotional and physical maltreatment; too few cases experienced physical maltreatment only to constitute a valid category

Table 5
Linear regression parameter estimates, association of retrospective reports of childhood maltreatment with adult physical symptoms (MIDUS)

	Physical symptoms (linear regression)
No maltreatment either parent, positive relationship with both	reference
No maltreatment either parent, negative relationship with at least one	0.18 ^{a**} (0.07) ^b
Emotional maltreatment only by either parent, positive relationship with both	0.19 ^{***c} (0.06)
Emotional maltreatment only by either parent, negative relationship with at least one	0.37 ^{***c} (0.07)
Both forms of maltreatment by either parent, positive relationship with both	0.37 ^{***d} (0.11)
Both forms of maltreatment by either parent, negative relationship with at least one	0.50 ^{***d} (0.09)
Age	0.003 (0.001)
Female	0.24 ^{***} (0.05)
Nonwhite	-0.25 ^{***} (0.06)
Education	-0.04 ^{***} (0.01)
Constant	0.92 (0.09)
R ²	.10
Observations	3018

* p < .05;

** p < .01;

*** p < .001 in comparison to reference group (no maltreatment reported)

^a Unstandardized coefficient

^b Standard error

^c p value for comparison of coefficient difference = .008; ($F(1, 2995) = 7.01$)

^d p value for comparison of coefficient difference = .5; ($F(1, 2995) = 0.46$)

Both forms of maltreatment includes emotional and physical maltreatment; too few cases experienced physical maltreatment only to constitute a valid category

Table 6
Linear regression parameter estimates, association of retrospective reports of childhood maltreatment with adult self-rated health (MIDUS)

	Self-rated health (linear regression)
No maltreatment either parent, positive relationship with both	reference
No maltreatment either parent, negative relationship with at least one	-0.02 ^a (0.15) ^b
Emotional maltreatment only by either parent, positive relationship with both	-0.19 ^c (0.15)
Emotional maltreatment only by either parent, negative relationship with at least one	-0.60 ^{***c} (0.15)
Both forms of maltreatment by either parent, positive relationship with both	-0.10 ^d (0.19)
Both forms of maltreatment by either parent, negative relationship with at least one	-0.66 ^{***d} (0.18)
Age	-0.002 (0.003)
Female	-0.06 (0.08)
Nonwhite	0.20 (0.15)
Education	0.05 ^{**} (0.02)
Constant	7.31 (0.20)
R ²	.03
Observations	3015

*
p < .05;

**
p < .01;

p < .001 in comparison to reference group (no maltreatment reported)

^a Unstandardized coefficient

^b Standard error

^c p value for comparison of coefficient difference = .02; ($F(1, 2995) = 5.13$)

^d p value for comparison of coefficient difference = .03; ($F(1, 2995) = 4.84$)

Both forms of maltreatment includes emotional and physical maltreatment; too few cases experienced physical maltreatment only to constitute a valid category