The Great Recession and risk for child abuse and neglect

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Abstract

This paper examines the association between the Great Recession and four measures of the risk for maternal child abuse and neglect: (1) maternal physical aggression; (2) maternal psychological aggression; (3) physical neglect by mothers; and (4) supervisory/exposure neglect by mothers. It draws on rich longitudinal data from the Fragile Families and Child Wellbeing Study, a longitudinal birth cohort study of families in 20 U.S. cities (N = 3,177; 50% African American, 25% Hispanic; 22% non-Hispanic white; 3% other). The study collected information for the 9-year follow-up survey before, during, and after the Great Recession (2007-2010). Interview dates were linked to two macroeconomic measures of the Great Recession: the national Consumer Sentiment Index and the local unemployment rate. Also included are a wide range of socio-demographic controls, as well as city fixed effects and controls for prior parenting. Results indicate that the Great Recession was associated with increased risk of child abuse but decreased risk of child neglect. Households with social fathers present may have been particularly adversely affected. Results also indicate that economic uncertainty during the Great Recession, as measured by the Consumer Sentiment Index and the unemployment rate, had direct effects on the risk of abuse or neglect, which were not mediated by individual-level measures of economic hardship or poor mental health.

1. Introduction

The Great Recession, which officially began in December 2007 and ended in June 2009 (NBER, 2010) was the largest economic downturn in the United States since the Great

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Depression. The Great Recession was characterized by the collapse of the housing market, sustained levels of high unemployment, the collapse or rescue of a number of large banks, and widespread fear of a long-term economic downturn or depression.

That economic downturns are associated with adverse changes in the parenting children receive is well established in the existing literature (Elder, 1974). Elder's seminal study of children and families during the Great Depression (1974), and in later work with Conger (Conger & Elder, 1994; Elder, Conger, Foster, & Ardelt, 1992; Elder & Conger, 2000), established the groundwork for the Family Stress Model. This model describes the pathways through which individual-level economic hardship increases marital conflict and mental health problems, which in turn increase negative parenting practices, resulting in increased child problem behaviors. Given the severity of the Great Recession, the links between it and changes in the well-being of children and families may be particularly pronounced. Such consequences are important to understand given the extraordinarily large number of families affected by the Great Recession and the long-term implications of parenting for children's development.

We estimate the influence of the Great Recession by matching two different macroeconomic measures—the national Consumer Sentiment Index and the local unemployment rate—to the Fragile Families and Child Wellbeing Study (FFCWS), taking advantage of the fact that children and families were interviewed at different points during the Great Recession both within and across cities (due to variation in interview timing). This strategy enables us to estimate the association between an exogenous economic condition and the risk for child maltreatment. Additionally, we test a number of potential individual-level moderators and mediators.

Although we draw on the work of Elder (1974) and Conger and Elder (1994), we test the Family Stress Model in a number of ways. First, we rely on a prospective longitudinal birth cohort study that contains a much wider variation in parental marital status and racial/ethnic and socioeconomic make-up than the samples used in much of the prior Family Stress Model literature (Conger, Conger, & Martin, 2010). The conflict that arises within marital relationships as a result of economic hardship is a key component of the Family Stress Model. That our data allow us to test how the Great Recession might affect the risk for child maltreatment among non-married parents may be a particularly important addition.

Second, that our macroeconomic indicators are exogenous—that is to say, independent of individual families' experiences—is important for our study. Exogenous variables remove the selection that would otherwise influence our findings. For instance, an individual's parenting might be associated with their unemployment status due to some other unobserved factor that is correlated with both, whereas the overall unemployment rate is independent of a given individual's parenting.

In this sense, providing exogenous predictors, the Great Recession can be seen as a type of "natural experiment." Although much of the prior literature involving the Family Stress Model examined family functioning in the context of economic hardship (see for example: Conger Wallace, Sun, Simons, McLoyd, & Brody, 2002), it generally compared families

who lost their jobs or livelihoods with families who did not. However, it is important to note that families who lost their jobs and those who did not likely differed from one another on other unmeasured characteristics. By using exogenous macroeconomic indicators rather than individual ones our study avoids this problem.

Third, we depart from prior research grounded in the Family Stress Model by examining the effect of both exogenous changes in the macro-economy *and* individual-level measures of economic hardship. In particular, we draw on two measures of the macro-economy that capture different, but linked, aspects of the Great Recession. The Consumer Sentiment Index (CSI) is designed to capture the country's perceptions of the state of the economy as a whole as well as perceptions of personal finances, while the local unemployment rate is a measure of the severity of the Great Recession with regard to employment prospects in a person's local area. In this way our macroeconomic measures capture both the widespread uncertainty brought on by the Great Recession as well as local labor market effects.

In addition, we test the potential moderating role of family structure. Much of the literature based on the Family Stress Model relies on the connection between economic hardship and increased marital conflict as a primary pathway leading to harsh parenting and poor child outcomes (Conger, Conger, & Martin, 2010). However, given the wide range of research indicating that non-married mothers may be particular vulnerable to the negative effects of economic hardship and uncertainty, it may be particularly important to investigate the effect of the Great Recession across a range of family structures (Duncan & Brooks-Gunn, 1997; McLanahan & Sandefur, 1994).

Last, we test the potential mediating role of a number of individual-level measures of hardship. This strategy allows us to examine both the indirect and direct effects of the Great Recession on the risk for child maltreatment. Indeed, prior research has largely relied on either only macroeconomic measures (Millet, Lanier, & Drake, 2011), or only individual-level measures (Sedlak, Mettenburg, Basena, Petta, McPherson, Greene, & Li, 2010). The ability to test both indirect and direct effects of the Great Recession is an important innovation.

2. Background: The Great Recession

The Great Recession was the most severe economic downturn since the Great Depression. By the third quarter of 2009 U.S. households had lost nearly $16.4 trillion in net worth compared with the beginning of the recession period (Isidore, 2011). The national unemployment rate rose to approximately 10% from a steady pre-recession rate of 5% (Bureau of Labor Statistics, 2012). In addition, the Great Recession was notable because of the collapse of the housing market, which resulted in nearly 4 million foreclosures between 2006 and 2008 (RealtyTrac). The Great Recession was also marked by a number of large-scale bank collapses and rescues: Bear Stearns in April 2008; Country Wide Financial in July 2008; Merrill Lynch and Lehman Brothers in September 2008, among others. News coverage of these events was widespread; the Economist magazine estimated that use of the word "recession" in two national daily newspapers peaked in early 2009 with nearly 4,500 uses (The Economist, 2011). Media coverage of the Great Recession had large effects on the

public's confidence in the economy and expectations about their own finances. In fact, the Consumer Sentiment Index (CSI), a measure of consumer confidence, declined from an average of 86.5 in the 11 months prior to the recession to an average of 64.2 during the Great Recession. This was a remarkable decline. For example, in the non-recessionary years 2002 through 2006 the average change between 12-month averages was 4.4 points.

3. Theories of how economic shocks might affect families

3.1. The Family Stress Model

Conger and Elder put forth the Family Stress Model whereby economic hardship is thought to negatively affect parental relationships and mental health, which in turn affects parenting, which has negative consequences for child development. In their studies of families in the Great Depression (1974), the Iowa Farm Crisis (1994), and other related work (see for example: Brody, Ge, Conger, Gibbons, Murray, Gerrard, & Simons, 2000; or Conger, Conger, Elder, Lorenz, Simons, & Whitbeck, 1992), Conger, Elder, and colleagues, found that economic shocks were associated with worse parenting (and adverse changes in child development). In his classic study of the Great Depression, Elder documented the ways in which economic hardship is translated into increased aggressive parenting behaviors and reduced warmth and closeness between parents and children. The Family Stress Model would predict that as the economy worsened, parents would increase their harsh and neglectful parenting practices.

3.2. Subjective well-being

Several scholars have posited that economic shocks might affect families through their subjective assessments of well-being (Deaton, 2011). This theoretical prediction is supported by empirical research. A growing literature on economic shocks and people's self-reported well-being has shown that one need not be directly affected by an economic downturn to report changes in one's assessment of one's own well-being. For instance, Christelis, Georgarakos & Japelli (2011) and Shapiro (2010) have shown that many households that did not experience financial losses during the Great Recession nonetheless reduced their consumption. Deaton (2011) notes that traditional measures such as unemployment have a greater negative influence on subjective well-being than the associated loss of income would account for. Drawing on this theory and related research (Kalil, 2013), we include in our study a measure of consumer sentiment as well as the unemployment rate. Consumer sentiment may be a better measure than traditional macroeconomic measures because it captures individuals' subjective well-being *and* their view of the general state of the economy.

4. Prior evidence on economic shocks

4.1. Aggregate shocks

The focus of this paper is on the association between the Great Recession and risk for child abuse and neglect on the part of mothers. A growing body of research has examined the association between the Great Recession and outcomes such as hospital-diagnosed instances of child maltreatment (Berchick, Gallo, Maralani, & Kasl, 2011; Huang, O'Riordan,

Fitzenrider, McDavid, Cohen, & Robinson, 2011); high frequency spanking (Brooks-Gunn, Schneider, & Waldfogel, 2013); harsh parenting (Lee, Brooks-Gunn, McLanahan, Notterman, & Garfinkel, 2013); Child Protective Services investigations (for fathers, but not mothers) (Lindo, Schaller, & Hansen, 2013); material hardship (Pilkauskas, Currie, & Garfinkel, 2012); and domestic violence (Schneider, Harknett, & McLanahan, 2016). This study is among the first to investigate associations between the Great Recession and child abuse *and* neglect in a prospective longitudinal sample.

4.2. Individual-level experiences of economic hardship and uncertainty

Although evidence linking the aggregate unemployment rate to the risk for child abuse and neglect is limited, ample evidence indicates that individual experiences of unemployment and income instability are associated with poorer parental health and well-being and more punitive parenting behaviors (McLoyd, 1990), and in turn poorer outcomes for children (Duncan & Brooks-Gunn, 1997; Yeung, Linver, Brooks-Gunn, 2002). Prior work has demonstrated that job loss, even among high earners, is associated with increased depressive symptoms (Berchick, Gallo, Maralani, & Kasl, 2012); and stress (Strully, 2009); as well as lower birth weight (Lindo, 2011); and poorer school performance for children (Kalil & Wightman, 2011); and that even perceived job insecurity may have negative health effects (Burgard, Brand, & House, 2009).

5. Determinants of child abuse and neglect

Child maltreatment remains a widespread and pernicious problem in the United States. In 2013, the most recent year for which data are available, an estimated 6.4 million children were referred for reports of child abuse and neglect and approximately 2 million of those reports were screened-in for investigation or assessment (U.S. Department of Health and Human Services [DHHS], 2015).

The last 50 years have witnessed the development of a number of theories with the goal of explaining the determinants of child abuse and neglect. Early theories concentrated on the role of individual psychopathology in the risk for child abuse and neglect (Kempe, Silverman, Steele, Droegemueller, & Silver, 1962). This psychiatric model of abuse and neglect identified parental mental health problems, drug and alcohol use, and personality disorders as key predictors (Gil, 1970). In later work, Belsky (1984 & 1993) and Garbarino (1977) proposed developmental-ecologically based theories that moved beyond viewing the individual as an isolated actor, and rather as part of a process embedded within a bi-directional network of individual, family, neighborhood, and societal factors that each offered both protective and risk factors (Bronfrenbrenner, 1979; Cicchetti & Lynch, 1993; Sameroff, 1998).

Within this prevailing theoretical framework, researchers have long debated whether a causal effect of poverty on child maltreatment exists or whether the correlation between the two simply reflects selection (due to other unobserved factors that are associated with both maltreatment and poverty). It has also been unclear whether the same etiology predicts both abuse and neglect. A robust literature has demonstrated that low-income is associated with child maltreatment (Berger, 2004; Sedlak & Broadhurst, 1996), as are family and

neighborhood poverty (Coulton, Korbin, Su, & Chow, 1995; Drake & Pandey, 1996; Paxson & Waldfogel, 2003). Child neglect is often thought to be more closely linked to poverty than child abuse (Drake & Pandey, 1996; Fein & Lee, 2003; Slack, Holl, McDaniel, Yoo, & Bolger, 2004), and is much more prevalent (DHHS, 2015). The vast majority of prior studies have examined the role of individual-level measures of poverty and employment; a notable few have relied on more causal methods and have found evidence for both increased and decreased risk for maltreatment associated with maternal employment (Slack et al., 2004; Paxson & Waldfogel, 2002).

Child abuse is often thought of as an act of commission while child neglect is an act of omission. Prior research has posited that poverty may be more closely associated with child neglect, and particularly physical neglect, because it is often related to parents' ability to provide for the essential needs of a child (Berger & Waldfogel, 2011; Lindo & Schaller, 2013). Although limited prior research has found some mixed results of the effect of macroeconomic measures on child abuse, very little research has focused on child neglect as a separate construct and it is somewhat unclear what a priori expectations should be.

A number of possible reasons exist for why we might expect worsening uncertainty (as measured by the CSI) and increasing unemployment rates to be associated with increased risk for abuse, but potentially decreased risk for child neglect. Importantly, much of the existing literature has either focused exclusively on child abuse, or focused on overall rates of Child Protective Services involvement, without separating instances of abuse and neglect (Lindo, Schaller, & Hansen, 2013; Steinberg, Catalano, & Dooley, 1981). However, if a primary pathway of child abuse is through stress linked to a host of individual and macro-system hardships (Belsky, 1993), there is good reason to think that the Great Recession—a time of great uncertainty—would be associated with increases in parenting practices associated with the risk for child abuse. In contrast, child neglect is often thought to be closely linked to individual experiences of poverty (Cicchetti & Lynch, 1989). Increased uncertainty and poor local labor market conditions on the macroeconomic level, therefore, may not sufficiently affect parents such that instances of neglect would be expected to increase. It may be, for example, that uncertainty at the macroeconomic level is not a proximal enough influence to increase neglectful parenting behaviors. In fact, it may be that high local unemployment rates decrease the likelihood of neglect as parents spend more time with children and are better able to monitor their well-being. However, it is also possible that the Great Recession might be linked to increases in factors related to neglect such as depression or drug and alcohol use, although evidence of this to date is limited (Currie, Duque, & Garfinkel, 2013; Dagher, Chen, & Thomas, 2015).

6. The role of family structure

The second aim of the present study is to examine the potential moderating role of family structure. Prior research shows that parental relationships might influence how economic hardship affects parenting and child well-being (Elder, 1974). To the extent that having a reliable partner in the home helps cushion a mother from the effects of the Great Recession, the parenting of such mothers should be less influenced by the Great Recession than the parenting of mothers who are on their own or living with less reliable partners. A robust

literature has demonstrated that single mothers, either as a result of divorce or non-marriage, experience a wide range of social, economic, and parenting challenges that married mothers are less likely to confront (Berger, Paxson, & Waldfogel, 2009; McLanahan & Sandefur, 1994; McLoyd, Jayaratne, Ceballo, Mossakowski, & Borquez, 1994). Similarly, research on the risk for child maltreatment has often found that the presence of social fathers—romantic partners who are not biologically related to the mother's child—may pose a particular risk for child abuse (Daly & Wilson, 1980). Prior research indicates that social fathers' may be more reluctant to invest in nonbiologically related children, and may disrupt the family system (Daly & Wilson, 1996; Margolin, 1992). We therefore explore whether the associations between the Great Recession and parenting vary depending on whether the mother is living with the biological father of the child vs. with a social father, or no father.

6.1. The mediating role of individual-level economic hardship and health

A third aim of the present study is to test the potential mediating role of a number of individual-level measures of economic hardship as well as maternal depression, often thought to be a primary explanatory pathway for child maltreatment (Belsky, 1993). If individual-level measures of economic hardship and mental health problems explain the association between our macroeconomic measures of the Great Recession and risk for child maltreatment, it may indicate that the Great Recession was associated with child maltreatment through changes in individual economic well-being. However, to the extent that individual-level measures of the Great Recession are not associated with, and do not mediate, the macroeconomic measures of the Great Recession, it will indicate that the exogenous shock of the Great Recession itself affected parenting.

The children examined in our study were approximately 9 years old at the time of the interview. Elder's classic work on the children of the Great Depression relies heavily on both role- and age-based theories in constructing a life-course perspective of the Family Stress Model. The risk for child maltreatment is highest before 4 or 5 years of age (Figure 1) (Centers for Disease Control, 2014; MacKenzie, Nicklas, Waldfogel, & Brooks-Gunn, 2013). However, a substantial number of victims are school-age children or adolescents (Hussey, Chang, & Kotch, 2006; DHHS, 2015).

7. The present study

The primary aim of our study is to examine the links between the Great Recession and the risk for child abuse and neglect. This is accomplished by analyzing two separate, but related, measures of macroeconomic shocks associated with the Great Recession: the national Consumer Sentiment Index; and the local unemployment rate. These measures are particularly apt given that the Great Recession was characterized by widespread uncertainty as well as high unemployment. One of the unique contributions of this study is our ability to simultaneously estimate associations with both of these exogenous economic shocks. The CSI is likely a strong measure of the uncertainty that people felt during the Great Recession about both the national economy and their own personal finances, while local unemployment rates measure both the likelihood that a given person will be unemployed as well as the broader pernicious effects of job loss during the Great Recession. Additionally, we are able

to further parse the associations between the Great Recession and parenting by controlling for past parenting behaviors, further isolating the links with the economic indicators.

Theory and prior research lead us to propose three related hypotheses. First, worsening consumer sentiment (as measured by the CSI) and increasing unemployment rates during the Great Recession will be associated with increased maternal harsh parenting, but may or may not be associated with increased neglect, which may be more likely to be affected by individual hardship rather than by macroeconomic conditions. This may be because neglect is often thought of as being closely tied to individual experiences of material economic hardship (Dubowitz et al., 2005). Second, single mothers and mothers who have a social father in the household may be more likely to increase their harsh parenting practices during the Great Recession than those who are married and/or living with the child's biological father (Berger, 2005; Daly & Wilson, 1980). Indeed, some limited prior research indicates that children living in households with a social father are at increased risk of serious child maltreatment (Stiffman, Schnitzer, Adam, Kruse, & Ewigman, 2002). One possible explanation for this is that social father households may have lower quality caregiving environments (Berger, 2004), or that mothers may divert attention and resources to new partners (Daly & Wilson, 1980). Third, to the extent that our measures of individual-level economic hardship and mental health are not correlated with our measures of the macroeconomy—indicating that our macroeconomic measures are indeed measuring an exogenous shock that is separate from individual experience—we hypothesize that they will not mediate the association between CSI, the unemployment rate, and the risk for child maltreatment.

8. Methods

8.1. Sample

This study draws on data from the Fragile Families and Child Wellbeing Study (FFCWS), a rich longitudinal birth cohort study made up of nearly 5,000 families in 20 large U.S. cities in 15 states between 1998 and 2001. FFCWS oversampled nonmarital births, and as a result socioeconomically disadvantaged families. When weighted, it is representative of families in large U.S. cities (Reichman, Teitler, Garfinkel, & McLanahan, 2001). Follow-up surveys were conducted when the focal child was approximately, 1, 3, 5, and 9 years old. Measures of maternal abuse and neglect are drawn from the 9-year wave, controlling for parenting at the prior wave. Additionally, the analysis controls for a host of characteristics measured at the baseline survey. The 9-year interviews occurred in the period before, during, and after the Great Recession (August 2007 – March 2010).

Overall, rates of missingness were low (only four variables were consistently missing more than 1%, ranging from about 2.6% to about 20%). We address missing data with multiple imputation.[1] Our final samples after imputation range from 2166 to 3177, depending on the outcome (Table 1). After multiple imputation our largest sample was 22% white, 50%

[1]Multiple imputation was conducted using STATA 13's ICE software. Five data sets were imputed drawing on information from the outcomes, predictors, and mediators, as well as a range of related characteristics including child and parent age, race/ethnicity, parental education level, whether the focal child is the first birth, low birth weight, child gender, and city.

African American, 25% Hispanic, and 3% another race/ethnicity. In some models we divide the sample by mothers' marital status. After multiple imputation at the 9-year survey, 40% of mothers were married to or cohabiting with the focal child's biological father, 20% were married to or cohabiting with a social father, and 40% were single. In addition, approximately 45% of mothers reported a drop in income between the age 5 and age 9 surveys, and on average mothers reported a loss of about 7.9 hours of work per week. The final sample after multiple imputation is quite similar to the sample we would have obtained had we relied on list-wise deletion.

9. Measures

9.1. Risk of abuse and neglect

The FFCWS contains a number of questions and scales designed to measure harsh parenting and the risk for child abuse and neglect. We recode the measures of harsh parenting to be a dichotomous indicator of extreme parenting behavior. Simply estimating the range of behaviors on a continuous scale is insufficient for this work because parents in our study use high levels of harsh parenting even without the additional stress of the Great Recession. In addition, the theories of parental responses to economic uncertainty on which we rely describe the effect of large shifts in parenting. For these reasons, we are interested in changes in parenting at the margin.

9.1.1. Risk of abuse—Mothers were asked a series of questions drawn from the Conflict Tactics Scale for Parent and Child (CTPSC) (Straus, Hamby, Finkelhor, Moore, & Runyan, 1998), which assesses physically and psychologically aggressive parenting behaviors (see Appendix). We recode these scales so that high frequency physically aggressive behavior is defined as aggressive behavior that occurred 11 or more times in the past year (Year 9 Mean = 0.06; SD 0.26; see Figure 1 for mean trends between years 3 and 9 in physical and psychological aggression, physical neglect, and supervisory/exposure neglect). High frequency psychologically aggressive behavior is defined in the same manner (Year 9 Mean = 0.38; SD 0.48).

9.1.2. Physical neglect—We follow Font and Berger (2015) in constructing measures of maternal neglect. Physical neglect is most often defined as a caregiver's failure to provide for the basic needs of a child; including food, safe housing, medical care, or education (Font & Berger, 2015). However, it is important to note that the definition of neglect varies from state to state (Dubowitz, et al., 2005; DHHS, 2015). Drawing on the core, in-home, and primary caregiver surveys, we construct a measure of physical neglect based on several indicators including: whether the child did not receive sufficient food, whether the child ever did not receive needed medical care, whether the family was homeless or doubled-up, if the household had utilities shut off or was unsafe, or if the child appeared to have poor physical hygiene. For items that were not dichotomous, we dichotomize by creating a cutoff point at the 90th percentile. We then sum the items and create an indicator of any evidence of physical neglect (Berger, Font, Slack, & Waldfogel, 2013) (Year 9 Mean = 0.33; SD 0.47).

9.1.3. Supervisory/exposure neglect—We follow a similar procedure in constructing a measure of supervisory/exposure neglect (also following Font & Berger). Parents were categorized as putting their child at risk for this kind of neglect based on four questions: if the child was left alone without an adult, if the child was exposed to parental substance abuse or domestic violence, or if the child was exposed to criminal activity. For items that were not dichotomous, we dichotomize by creating a cutoff point at the 90th percentile. We then sum the items and create an indicator of any evidence of physical neglect (Berger, Font, Slack, & Waldfogel, 2013) (Year 9 Mean = 0.17; SD 0.37).

9.2. Measures of the Great Recession

We match two macroeconomic indicators of the Great Recession to the FFCWS data, based on the month and year in which a family was interviewed for the survey. Because the age 9 survey was administered at different times in different cities, and also took several months to complete in each city, as discussed below there is considerable variation in each macroeconomic indicator for our sample (see Figure 2). This variation is not related to the characteristics of individual families. As a robustness check, we re-estimated models including controls for whether a family was interviewed in the final month in a city or dropping those cases altogether, and results were unchanged.

9.2.1. Consumer Sentiment Index—Consumer sentiment is measured using data from the Consumer Sentiment Index (CSI) (Thompson-Reuters/University of Michigan, 2012). CSI is collected from a national monthly random digital phone survey of a minimum of 500 people and is normalized to have a baseline value of 100 in December 1964. CSI is appended to mother's FFCWS interview by matching the month and year of mother's interview to the CSI at that time. Last, CSI is reverse coded so that high values of CSI indicate lower consumer confidence. It is important to note that the CSI is a measure of national consumer confidence at the time the family was interviewed (Mean = 72.23; SD = 6.27).

9.2.2. Unemployment Rate—Unemployment rate data were obtained from the Bureau of Labor Statistics' Local Area Unemployment Statistics (LAUS) and appended to the FFCWS by matching the monthly local area unemployment rate of the Core Based Statistical Area (CBSA) in which each mother in the Fragile Families data lived at the time of her FFCWS interview. This strategy assigns each mother the unemployment rate from the city in which she was surveyed as part of the age 9 FFCWS. Thus, it is a measure of local labor market conditions (Mean = 7.73; SD = 2.47).

9.3. Other control variables

The models control for a number of socioeconomic and demographic variables drawn from the baseline (birth) survey, unless otherwise noted: maternal age; education (less than high school, high school, some college, college or higher); race/ethnicity (white, black, Hispanic, and other); immigrant status; relationship status (married, cohabiting, or not living with a spouse/partner); history of depression between baseline and the age 5 survey (Kessler, Andrews, Mroczek, Üstün, & Wittchen, 1998); child sex, low birth weight, and age in months; and household income. In addition, city fixed effects are included in all of our

models to control for variation across the sample cities by including dummy indicators for city of interview.

9.4. Potential moderator: Family structure

Indicators of the potential moderating role of family structure are created from mother's self-report at the 9-year survey of mother's marital status. We stratify our models by mother's marital status: whether she is married to or cohabiting with either the focal child's biological father or someone else (a social father), or if she is not in a romantic relationship. In addition to these measures, we tested a number of different ways of characterizing family structure and our results were similar across specifications. Prior evidence indicates that mothers who are not married to the child's biological father may be at particular risk for child maltreatment (Berger, Paxson, & Waldfogel, 2009).

9.5. Potential mediators

We test the potential mediating role of a number of individual-level measures of economic hardship and mental health. Based on questions asked at both the 5-year and 9-year surveys we construct an indicator of whether mothers' income declined between the waves and whether mothers lost work hours between the waves. We also draw on measures of household income at the 9-year survey, and unemployment status at the 9-year survey. Last, we use a measure of maternal depression at the 9-year survey.

10. Analytic approach

We examine the associations between two measures of the macroeconomy, the Consumer Sentiment Index (CSI) and the unemployment rate, and two measures of abuse, and two measures of neglect. Odds ratios are estimated from logistic regression models because our abuse/neglect outcome variables are all dichotomous. For each abuse or neglect outcome we begin by estimating the role of the macroeconomic measures—CSI and the unemployment rate (model 1). Next, we estimate a model that includes controls for abuse or neglect at the previous wave (model 2). This lagged dependent variable, or residualized change, model allows us to better assess the influence of each macroeconomic indicator while holding prior parenting constant. The model estimates the association between our macroeconomic indicators of the Great Recession and changes in our outcomes between age 5 and age 9 (Cronbach & Furby, 1970). All our models include the full set of covariates outlined above, as well as city fixed effects to control for unobserved differences between cities.

To assess the potential moderating role of family structure, the above models are re-estimated, first stratifying by whether the mother is married or cohabiting with the focal child's biological father, whether the mother is married or cohabiting with a social father, or whether the mother is single.

Last, to assess the potential mediating role of individual-level measures of economic hardship and mental health, we return to model 2, and add our potential mediators to the model. In results not shown we tested progressively adding the mediators rather than simultaneously and results were unchanged.

11. Results

11.1. Associations between measures of the Great Recession and child abuse and neglect

Table 1 shows descriptive statistics for the imputed data for our largest sample. In general, our sample is majority African American (50%) and tends to have low levels of education (63% high school equivalent or less). At baseline, a majority of the mothers were unmarried by design (76% cohabiting or single). Mothers were also young (25 years old) and had high levels of depression (28% between baseline and the 5-year survey and 17% at the 9-year survey).

Table 2 shows the correlation between our macroeconomic measures of the Great Recession and mothers' individual-level measures of economic hardship and mental health. The results demonstrate that CSI is indeed independent of individual experience and that it is not correlated with depression.

Table 3 shows odds ratios (and significance levels) from a series of logistic regression models investigating the association between CSI and the unemployment rate, our two measures of risk of abuse—physically and psychologically aggressive parenting—and our two measures of neglect—physical and supervisory/exposure neglect (here and elsewhere we focus on results that are significant at $p < 0.05$ or $p < 0.01$, or marginally significant at $p < 0.10$). Our first model shows that a one-point increase in CSI (reverse-coded, so indicating lower confidence) is associated with a 4% increase in the odds of frequent physical aggression ($p < 0.05$) and a one-point increase in the unemployment rate is associated with a 15% increase in the odds of frequent physical aggression ($p < 0.05$). Model 2 adds a lagged dependent variable that controls for high frequency physical aggression at the prior wave. Although the lagged dependent variable is strongly associated with physical aggression (odds for high frequency physical aggression are 4.45 times as large for those who were physically aggressive at the prior wave), the odds ratios for CSI and unemployment remain largely unchanged from model 1.

Similarly, table 3 also shows that a one-point increase in CSI is associated with a 2% increase in the odds of frequent psychological aggression ($p < 0.05$) and a one-point increase in the unemployment rate is associated with a 12% increase in the odds of frequent psychological aggression ($p < 0.01$). As with the models for physical aggression, the addition of the lagged dependent variable (frequent psychological aggression at the prior wave) does not change the association between CSI and the unemployment rate and high frequency psychological aggression. Given the large standard deviations, the odds ratios imply fairly small effect sizes. However, this perhaps stands to reason given that we are measuring associations between macroeconomic factors and individual parenting behaviors.

Table 4 repeats the above analysis, replacing abuse with two measures of neglect, physical neglect and supervisory/exposure neglect. Model 1 demonstrates that a one-point increase in CSI is associated with a 1% decrease in the odds of physical neglect ($p < 0.10$) and that a one-point increase in the unemployment rate is associated with a 4% decrease in the odds of mothers' physical neglect ($p < 0.05$). Model 2 indicates that the addition of a lagged dependent variable controlling for physical neglect at the prior wave does not alter the

association. Turning to supervisory/exposure neglect we do not find statistically significant associations between CSI and mothers' supervisory/exposure neglect, but we do find that a one-point increase in the unemployment rate is associated with 3% decrease in the odds of mothers' supervisory neglect ($p < 0.01$), and that the addition of the lagged dependent variable largely does not change this association.

11.2. Moderators: The role of family structure

We assess whether the associations between the Great Recession and mothers' risk for child abuse and neglect vary depending on whether a father is present and the type of relationship he has with the mother (Tables 5 and 6). The potential moderating role of mothers' relationship status emerges most clearly with respect to physically aggressive parenting.

Table 4 demonstrates that a larger association between CSI and high frequency physical aggression is found for mothers who are married to or cohabiting with a social father (23% increase in the odds, $p < 0.001$) as opposed to mothers who are married to or cohabiting with the focal child's biological father (3% increase in the odds of frequent physical aggression, n.s.) or single mothers (n.s.). The association between CSI and mothers' physical aggression is significantly different for social father households compared to biological father present ($p < 0.05$) and single mother households ($p < 0.01$). Turning to the unemployment rate, we find somewhat different results, with somewhat higher odds of mothers' physical aggression associated with households where the mother is married to or cohabiting with the biological father (but not statistically different).

Turning to high frequency psychological aggression, we find somewhat higher odds of psychological aggression among single mothers (as compared to the married/cohabiting mothers and social father present groups), a 4% increase in the odds of mothers' psychological aggression for each one-point increase in CSI ($p < 0.10$), and a 15% increase in the odds for each one-point increase in the unemployment rate ($p < 0.10$); however, these associations do not differ significantly across the different marital status groups. Overall, we do not find notable differences in the effects of CSI or unemployment rates by marital status for either type of neglect.

11.3. Mediators: Individual-level measures

Tables 7 and 8 examine the role of a number of potential mediators. These models allow us to determine if individual-level measures of economic hardship and mental health problems explain some of the association between our macroeconomic measures and the risk for child abuse and neglect. Overall, we find no evidence that individual-level experiences of hardship or mental health problems mediate the associations between the Great Recession and mothers' risk of child abuse or neglect. Although the odds ratio for maternal depression (measured at the age 9 survey) is large and significant in all models (Tables 7 and 8), it does not appear to explain our main findings. Similarly, although income measured at the age 9 survey is significant (Table 8), it too does not explain the association between our macroeconomic measures and physical neglect.

11.4. Robustness check

Measuring child neglect is particularly difficult for a number of reasons. Although the federal government offered a basic definition of neglect with the introduction of the Child Abuse Prevention and Treatment Act (1974, 2010), there is wide variation in how states define neglect internally (Dubowitz et al., 2005). Indeed, many states specifically note that aspects of neglect that are a result of poverty may be treated differently (DHHS, 2015). To that end, we estimated alternative models of our indicator of physical neglect, removing measures that may be directly related to poverty. In this specification we limit our definition of physical neglect to instances of the child being exposed to domestic violence and interviewer observations of child poor hygiene. In these models (not shown, but available upon request) our results are no longer statistically significant, and although our results for the association with CSI are similar in magnitude, our findings for the association with the unemployment rate are reversed.

One possible explanation for our findings is that experiencing poverty—high levels of material hardship, for example—is indeed associated with child neglect, but that our more subjective macroeconomic measures do not work through these poverty-explicit pathways.

To that end, we conducted an additional series of regressions focusing on individual-level indicators of economic uncertainty during the Great Recession. Appendices I and II demonstrate that mothers' income loss is associated with increases in the odds of mothers' physical aggression and supervisory/exposure neglect. Mothers' unemployment is associated with an increase in the odds of mothers' physical neglect. Similarly, a loss of work hours is associated with an increase in the odds of mothers' physical aggression and physical neglect.

12. Discussion

A number of reasons why it is important to understand the association between the Great Recession and the risk for child abuse and neglect exist. Perhaps most compelling is the scope of the Great Recession and its likely effects on a wide swath of the population. Many families faced unprecedented economic uncertainty and hardship during the Great Recession, and work on prior economic shocks suggests that this event may well be associated with child maltreatment. Second, the Great Recession, and the Fragile Families Study, offers a unique opportunity to seek a more causal understanding of the role of economic hardship and uncertainty in the risk for child abuse and neglect. The exogenous macroeconomic shock framework helps to remove much of the problems likely associated with endogenous measures of individual economic hardship in the prior literature.

Prior research on the effects of individual and family economic hardship indicates that poverty and economic hardship are associated with child maltreatment (Slack, Holl, McDaniel, Yoo, & Bolger, 2004). Our study, examining macro-level economic shocks, provides similar evidence for the risk of child abuse, but some mixed evidence for neglect.

We find that both the uncertainty associated with the Great Recession (CSI), and the share of the local population that was unemployed, were significantly associated with elevated risk for child abuse by mothers. Our findings lend credence to the proposition that the effect of

the Great Recession was indeed much broader than simply its effect on those who lost their jobs or homes as a result of it. Indeed, our macroeconomic measures indicate that the Great Recession may have sowed widespread fear and uncertainty both about the fate of the national economy and individual finances (as measured by the CSI) as well as by the experiences of people in their local areas (as measured by the local unemployment rate).

Thus, our results provide evidence that both the Family Stress Model and broader theories and empirical evidence about the ways in which subjective perceptions of well-being may affect behavior, may be at work. A range of research has demonstrated that macroeconomic conditions can affect even those who have not been directly affected because they are likely to change their behaviors as they anticipate future economic hardship (Baumeister, Vohs, DeWall, & Zhang, 2007; Tversky & Kahneman, 1991). In this framework it is clear that both the local unemployment rate and the more subjective measure of the CSI are particularly apt indicators of the extent of the effects of the Great Recession.

This work is important for our understanding of the ways in which economic conditions are related to the risk for child maltreatment in at least two important ways. First, our findings are largely consistent with prior research indicating that worsening economic conditions are associated with increased harsh parenting. Our models investigate the association between the Great Recession and high frequency maternal physical and psychological aggression. Because we control for these measures at the prior wave, we view these estimates as measures of the change in parenting that is linked to our macro-level measures of the Great Recession. We add to the prior literature by demonstrating that broad-based economic uncertainty is associated with increased high frequency harsh parenting, which may be a risk for child abuse.

In contrast, our findings indicate that the Great Recession, as measured by our macroeconomic indicators, was associated with decreased odds of physical and supervisory/exposure neglect. These results are somewhat in contrast with prior research that indicates that poverty and neglect are highly correlated.

Results from our main model, together with results shown in the Appendix, demonstrate that while child abuse may be associated with increasing economic uncertainty on the macroeconomic level, child neglect may be more closely linked to individual experience of hardship. It may be, for instance, that economic uncertainty linked to the macro-economy *reduces* child neglect through increased parental attention to children, while at the same time the individual experience of hardship—rather than subjective perception of uncertainty—is associated with *increased* neglect.

12.1. Moderators

As previously noted, we see our work as an extension of the Family Stress Model. A key component of the Family Stress Model is the increased relationship conflict between parents as a result of economic hardship, which leads to increased harsh and punitive parenting (Conger & Elder, 1994). In contrast, the exogenous shock literature has focused on the direct effect of the economic climate on parenting. This study adds to our understanding of this process by looking separately at households with married/cohabiting parents (focal child's

biological father), households with a social father present, and households with a single mother. Our results provide evidence that family structure may buffer or exacerbate some of the negative effects of the Great Recession.

In particular, our results indicate that worse CSI is associated with increased physical aggression among mothers living with a social father, but that living with the child's biological father or being single may in fact buffer some of the negative effect of worsening CSI. The social father groups may be particularly vulnerable to worsening confidence because they may lack confidence in the stability of their home relationships, whereas the married/cohabiting and single mother groups may have more confidence or stability at home, which may help buffer them from the economic uncertainty outside the home. In contrast, we do not find consistent evidence that the effect of the Great Recession varies for either type of neglect based on mothers' marital status. Given prior evidence about the prevalence of neglect among different family structures (Jones & McCurdy, 1992), our results may be further evidence that individual experiences of economic hardship are more closely related to neglect than are macroeconomic measures.

12.2. Mediators

Our results for the role of individual-level measures of economic hardship and mental health problems do not reveal evidence of individual mediation. We draw on a number of measures of economic hardship, both at the 9-year survey and as measures of change, as well as maternal depression at the 9-year survey. These results are an important addition to the existing literature and suggest that the macroeconomy itself can directly affect mothers' parenting, likely as a result of the increased economic uncertainty captured by the CSI and local unemployment rates.

13. Limitations

This study encountered four primary limitations. First, in common with all observational studies, we cannot be certain that the associations we are estimating are causal. However, because our focus is on economy-wide shocks that are exogenous to the individual—since they draw on aggregate macroeconomic measures rather than individual ones—the Great Recession can be seen as a "natural experiment" and thus unlikely to be confounded with unobserved individual factors. In addition, our models include extensive controls for child and family characteristics, city fixed effects, and, in some models, lagged dependent variables. Second, our aggregate indicators are measured at different levels (the unemployment and home foreclosure rates are CBSA and state specific while CSI is a national measure). It is possible that as a national measure CSI may lose some geographic variation, in which case results with regional or local measures might be even stronger. Third, our parenting measures are self-reported and subject to reporting bias. Fourth, due to data limitations, we focus on risk of abuse or neglect on the part of mothers, and do not take into account the treatment of children by fathers or father figures. Exploring the effect of shocks such as the Great Recession on fathers' parenting is an important direction for future research.

14. Conclusion

This study provides new evidence about the association between economic shocks and the risk for child abuse and neglect. We find evidence that the Great Recession was associated with increased risk for high frequency maternal physical and psychological aggression, which fortunately occurs rarely among families with children this age (9). We do not know to what extent the Great Recession may have been associated with similar increases in aggressive parenting among families with younger or older children. But certainly our results would suggest that during times of economic downturns such as the Great Recession, professionals who interact with children should be aware of the risks of family stress and should try to provide support services accordingly. Importantly, we investigate *high frequency* harsh parenting, which is much more likely to be affected as a result of the Great Recession than an increase in any harsh parenting at all. Our results also indicate that families that may be unstable to start with—particularly households with a social father present—may be particularly vulnerable. Indeed, prior work on the presence of social fathers indicates that these households may be vulnerable to child maltreatment (Daly & Wilson, 1980). At the same time, our results provide a more nuanced story about how families cope in the face of economic shocks.

Importantly, although we find evidence of *increased* high frequency physical and psychological aggression, we find *decreased* odds of physical and supervisory/exposure neglect. This finding may indicate that the mere expectation of future economic hardship will not increase the likelihood of neglect, but rather that neglect is more closely associated with actual experienced economic hardship. If this were the case, then we would not expect to find increases in neglect associated with a macroeconomic shock.

This study offers evidence about the influence of economic shocks on the risk for maternal child abuse and neglect, in contrast to a broader literature based on individual and family measures of poverty and economic hardship. By drawing on the Consumer Sentiment Index and the unemployment rate we are able to circumvent the potential bias associated with individual-level measures of unemployment, poverty, and job loss, in so far as these measures are likely to be correlated with a number of observed and unobserved parenting behaviors that could affect the risk for child maltreatment. In addition, we offer potential new insights about the Family Stress Model by examining the effect of the Great Recession within a variety of family structures.

Our findings provide further evidence for the contention that the Great Recession may have adversely affected parents, even if they themselves did not experience economic hardship (Gassman-Pines, Gibson-Davis, & Ananat, 2015). Indeed, our results indicate that widespread economic uncertainty—as measured by the CSI and local unemployment rates—may have increased mothers' harsh parenting practices. It may be, for example, that the experience of having co-workers, friends, or family who lost their jobs is sufficient to influence some aspects of maternal parenting even if mothers themselves were not directly affected by the Great Recession.

Acknowledgements

Appendix

Appendix I

Individual economic hardship during the Great Recession & high-frequency physical and psychological aggression: Odds ratios from logistic regression models

	Physical aggression			Psychological aggression		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Income drop	1.35^{+}			1.04		
Unemployed		1.02			0.91	
Loss of hours			1.01^{**}			1.00
Lagged dependent variable	4.38^{***}	4.37^{***}	4.44^{***}	4.27^{***}	4.27^{***}	4.26^{***}
N		2,210			2,254	

Notes:

Results without lagged dependent variable are similar

[a] Includes covariates not shown (measured at baseline): maternal and child age; mother highest level of education; mother race/ethnicity; mothers' history of depression; child sex; child low birth weight; immigrant status; mother relationship status; household income; city fixed effects

[+] $p < 0.10$,

[*] $p < 0.05$,

[**] $p < 0.01$,

[***] $p < 0.001$

Appendix II

Individual economic hardship during the Great Recession & maternal neglect: Odds ratios from logistic regression models

	Physical neglect[a]			Supervisory neglect[a]		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Income drop	1.11			1.32^{*}		
Unemployed		1.69^{***}			1.10	
Loss of hours			1.01^{*}			1.00
Lagged dependent variable	1.27^{*}	1.24^{*}	1.27^{*}	2.73^{***}	2.68^{***}	2.71^{***}
N		2,371			3,177	

Notes:

Results without lagged dependent variables are similar

[a] Includes covariates not shown (measured at baseline): maternal and child age; mother highest level of education; mother race/ethnicity; mothers' history of depression; child sex; child low birth weight; immigrant status; mother relationship status; household income; city fixed effects

[+] $p < 0.10$,

[*] $p < 0.05$,

$$^{**}p < 0.01,$$
$$^{***}p < 0.001$$

Abbreviations

CSI	Consumer Sentiment Index
FFCWS	Fragile Families and Child Wellbeing Study
CTPSC	Conflict Tactics Scale for Parent and Child

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Highlights

- The Great Recession was associated with an increase in the risk for child abuse, particularly among households with a social father.

- The Great Recession was associated with a decrease in the risk for child neglect, indicating that child neglect may be more closely tied to actual experiences of economic hardship rather than the macroeconomic measures we employ.

- Widespread economic uncertainty may have increased maternal harsh parenting during the Great Recession.

- Macroeconomic - as opposed to individual level - measures of economic uncertainty may offer less biased estimates of the association between economic hardship and the risk for child maltreatment.
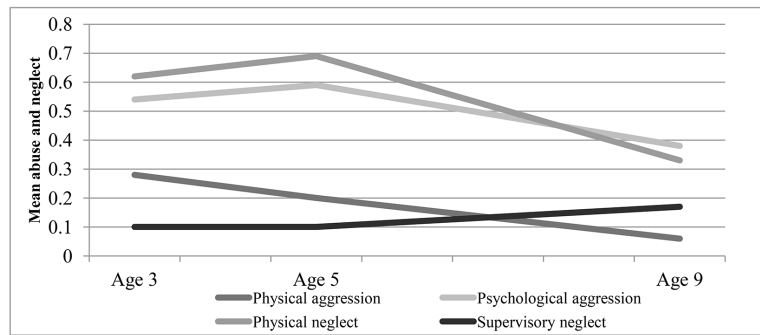
Figure 1.
Prevalence for the risk of maternal child abuse and neglect
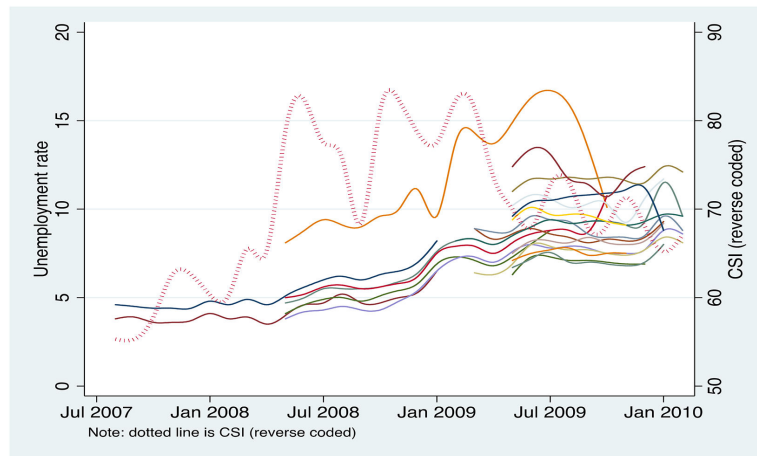
Figure 2.
National Consumer Sentiment Index and city unemployment rates during the Great
Recession across Fragile Families cities
Note: dotted line is national CSI and solid lines are unemployment rates in each FFCWS city

Table 1

Descriptive statistics

	Mean	SE
Child's age (in months at 9-year survey)	112.46	0.08
Child is a boy	0.53	0.01
Child low birth weight (<2500 grams)	0.10	0.01
Mother's age	25.21	0.11
Household income ($)	32,465.95	561.89
Mother ever depressed (baseline to 5-year survey)	0.28	0.01
Mother race/ethnicity		
White	0.22	0.01
African American	0.50	0.01
Hispanic	0.25	0.01
Other	0.03	0.00
Immigrant	0.13	0.01
Mother's education		
Less than high school	0.32	0.01
High school or equivalent	0.31	0.01
Some college	0.25	0.01
College or higher	0.11	0.01
Mother's marital status (Baseline survey)		
Married	0.25	0.01
Cohabiting	0.36	0.01
Single	0.40	0.01
Mother's marital status (9-year survey)		
Married/cohabiting	0.40	0.01
Social father	0.20	0.01
Single	0.40	0.01
Mother's Individual level mediators		
Income drop (5-year to 9-year survey)	0.45	0.01
Unemployed (9-year survey)	0.25	0.01
Loss of hours (5-year to 9-year survey)	7.86	0.28
Income (9-year survey)	45,586.16	896.09
Depression (9-year survey)	0.17	0.01
N	3,177	

Note: Based on multiply imputed data for largest available sample.

Table 2

Correlation between macroeconomic indicators and individual-level indicators

	CSI	UE Rate	Income drop	Unemployment	Work hr. loss	Income	Depression	Phys. aggression	Psych. aggression	Physical neglect	Supervisory/ exposure neglect
CSI	–	–	–	–	–	–	–	–	–	–	–
UE rate	-0.13***	–	–	–	–	–	–	–	–	–	–
Income drop	0.01	-0.04+	–	–	–	–	–	–	–	–	–
Unemployment	0.01	0.05*	0.15***	–	–	–	–	–	–	–	–
Work hr. loss	0.01	-0.01	0.15***	0.40***	–	–	–	–	–	–	–
Income	0.02	0.01	-0.23***	-0.23***	-0.10***	–	–	–	–	–	–
Depression	-0.02	0.02	0.05*	0.11***	0.08**	-0.09***	–	–	–	–	–
Phys. aggression	0.05*	0.01	0.02	0.03	0.07**	-0.05+	0.06**	–	–	–	–
Psych. aggression	0.06*	0.02	0.02	0.03	0.08**	-0.02	0.11***	0.30***	–	–	–
Physical neglect	-0.10***	-0.06*	0.06**	0.11***	0.05+	-0.20***	0.07**	0.02	0.02	–	–
Supervisory/exposure neglect	-0.01	0.02	0.09***	0.02	0.02	-0.05+	0.01***	0.11***	0.15***	0.12***	–

Table 3

The Great Recession[a] & high-frequency maternal physical & psychological aggression: Odds ratios from logistic regression models

	Physical aggression[b]		Psychological aggression[b]	
	Model 1	Model 2	Model 1	Model 2
Consumer Sentiment Index	1.04[*]	1.04[+]	1.02[*]	1.02[*]
Unemployment rate	1.15[*]	1.14[*]	1.12[**]	1.13[**]
Lagged dependent variable		4.45[***]		4.33[***]
N	2,166		2,254	

Notes:

[a] CSI reversed scaled.

[b] Includes covariates not shown (measured at baseline): maternal and child age; mother highest level of education; mother race/ethnicity; mothers' history of depression; child sex; child low birth weight; immigrant status; mother relationship status; household income; city fixed effects

[+] p <0.10,

[*] p<0.05,

[**] p < 0.01,

[***] p < 0.001

Table 4

The Great Recession[a] & maternal neglect: Odds ratios from logistic regression models

	Physical neglect[b]		Supervisory neglect[b]	
	Model 1	Model 2	Model 1	Model 2
Consumer Sentiment Index	0.99[+]	0.99[+]	0.99	0.99
Unemployment rate	0.96[*]	0.96[*]	0.97[**]	0.98[**]
Lagged dependent variable		1.08		2.49[***]
N	2,371		3,177	

Notes:

[a]CSI reversed scaled.

[b]Includes covariates not shown (measured at baseline): maternal and child age; mother highest level of education; mother race/ethnicity; mothers' history of depression; child sex; child low birth weight; immigrant status; mother relationship status; household income; city fixed effects

[+]p <0.10,

[*]p<0.05,

[**]p < 0.01,

[***]p < 0.001

Table 5

The Great Recession[a] & high-frequency maternal physical & psychological aggression by marital status: Odds ratios from logistic regression models

	Physical aggression[b]			Psychological aggression[b]		
	Married	Social father	Single	Married	Social father	Single
Consumer Sentiment Index	1.03	1.23 ***	1.00	1.02	0.98	1.04 +
Unemployment rate	1.12 +	1.07	1.12	1.09 +	1.12	1.15 +
Lagged dependent variable	6.64 ***	6.05 ***	3.53 ***	4.76 ***	4.79 ***	4.41 ***
N	891	450	861	908	471	875

Notes:

[a] CSI reversed scaled.

[b] Includes covariates detailed in tables 3 & 4.

+ p <0.10,

* p<0.05,

** p < 0.01,

*** p < 0.001

Table 6

The Great Recession[a] & high frequency maternal neglect by marital status: Odds ratios from logistic regression models

	Physical neglect[b]			Supervisory neglect[b]		
	Married	Social father	Single	Married	Social father	Single
Consumer Sentiment Index	0.98[+]	0.99	0.99	0.99	1.01	1.00
Unemployment rate	0.97	0.98	0.95[+]	0.94[*]	1.00	1.00
Lagged dependent variable	1.18	1.25	1.07	3.19[***]	2.31[**]	2.27[***]
N	925	500	946	1256	644	1277

Notes:

[a]CSI reversed scaled.

[b]Includes covariates detailed in tables 3 & 4.

[+] p <0.10,

[*] p<0.05,

[**] p < 0.01,

[***] p < 0.001

Table 7

The Great Recession[a] & high-frequency maternal physical & psychological aggression: The role of individual mediators. Odds ratios from logistic regression models

	Physical aggression[b]		Psychological aggression[b]	
	Model 1	**Model 2**	**Model 1**	**Model 2**
Consumer Sentiment Index	1.04^{+}	1.04^{+}	1.02^{*}	1.02^{*}
Unemployment rate	1.14^{*}	1.13^{+}	1.13^{**}	1.12^{**}
Lagged dependent variable	4.45^{***}	4.47^{***}	4.33^{***}	4.27^{***}
Mediators				
Income drop		1.26		1.02
Unemployed		0.78		0.82
Loss of hours		1.01^{+}		1.00
Income		1.00		1.00
Depression		1.44^{+}		1.50^{***}

Notes:

[a] CSI reversed scaled.

[b] Includes covariates detailed in tables 3 & 4.

[+] p <0.10,

[*] p<0.05,

[**] p < 0.01,

[***] p < 0.001

Table 8

The Great Recession[a] & high-frequency maternal neglect: The role of individual level mediators. Odds ratios from logistic regression models

	Physical neglect[b]		Supervisory neglect[b]	
	Model 1	Model 2	Model 1	Model 2
Consumer Sentiment Index	0.99[+]	0.99[+]	0.99	0.99
Unemployment rate	0.96[*]	0.95[**]	0.98[**]	0.97[**]
Lagged dependent variable	1.08	1.10	2.49[***]	2 37[***]
Mediators				
Income drop		0.87		1.24
Unemployed		1.10		0.94
Loss of hours		1.00		1.00
Income		1.00[***]		1.00
Depression		1 59[***]		2.03[***]

Notes:

[a]CSI reversed scaled.

[b]Includes covariates detailed in tables 3 &4.

[+]p <0.10,

[*]p<0.05,

[**]p < 0.01,

[***]p < 0.001