

LINDSEY JEANNE LEININGER *University of Illinois at Chicago*ARIEL KALIL *University of Chicago\**

## Economic Strain and Children's Behavior in the Aftermath of the Great Recession

*Families across the income spectrum experienced subjective feelings of economic strain during the Great Recession. Existing evidence suggests that much of that economic strain did not arise from individual-specific economic shocks, such as unemployment or income loss, as much as it did from worry and uncertainty about the future. The authors tested a model in which a measure of subjective perceptions of economic strain was the key predictor of children's behavior problems and objective indicators of economic experiences were treated as control variables. To do so, they used new data from a population-based sample of children ages 4–17 (N=303) living in southeast Michigan during the period 2009–2012. They found that economic strain exhibited a qualitatively large independent association with internalizing behavior problems for White—but not Black—children. This association was statistically significant over and above objective indicators of economic experiences and the family psychosocial context.*

Researchers have long been interested in the role that adverse economic conditions and experiences play in family processes and child

behavior. Studies dating back to the Depression years of the 1930s have shown positive correlations among family economic distress and marital dissolution, family conflict, and child abuse and neglect (Conger, Conger, & Martin, 2010; Conger et al., 1990). A key theoretical concept reflected in these studies is that economic distress can be represented not only by objective measures of economic conditions but also by family members' subjective perceptions of economic experiences.

Voydanoff (1990) articulated this perspective by arguing that family economic distress could be represented along four key dimensions: (a) employment instability, (b) employment uncertainty, (c) economic deprivation, and (d) economic strain. Employment instability and economic deprivation, she argued, are relatively objective factors indicating patterns of employment and changes in income over time. Economic deprivation, in her model, reflected families' income-to-needs ratio or poverty status. In contrast, employment uncertainty and economic strain are subjective indicators of an individual's perceived employment and financial situation. According to Voydanoff, economic strain is an evaluation of current financial status; it may reference perceived adequacy, financial concerns and worries, adjustments to changes in one's financial situation, or expectations about one's future financial situation (p. 1104).

A widely used formulation of this conceptual model was offered by Conger et al. (1990; see Figure 1, p. 646) and is referred to as the *family stress model* (see also Conger et al., 2010; Conger & Donnellan, 2007). The model

Department of Health Policy and Administration, School of Public Health, University of Illinois, 1603 W. Taylor Street, Chicago, IL 60612 (lindseyl@uic.edu).

\*Harris School of Public Policy Studies, University of Chicago, 1155 E. 60th St., Chicago, IL 60637.

*Key Words:* children's behavior problems, economic strain, social trends/social change.

predicts that adverse economic conditions such as low income, high debt levels, and employment instability generate economic strain or pressure reflecting subjective perceptions that one's current income is inadequate to meet one's needs. In this model, economic strain or pressure is a construct that reflects the types of frustrating experiences that are thought to increase parents' emotional distress and behavioral disturbances (Conger et al., 2010). Subsequent formulations of the model have proposed that parental emotional distress, marital discord, and relationship dissatisfaction spill over into parent-child relationships, thereby increasing the risk for children's adjustment problems. Numerous studies across different economic periods and local contexts have found support for this basic model (see Conger et al., 2010, for a review).

A central tenet in the family stress model is that economic strain is related only indirectly to children's adjustment through its influence on the behavioral and emotional functioning of parents (Conger et al., 2010). However, other studies have shown that it is not necessary for parents' depressive symptoms or family conflict to rise in order for children to be adversely affected by their parents' experiences of economic strain. Children's adjustment can be directly affected by their observations of their parents' (or, indeed, their friends' and neighbors') economic strain (Ananat, Gassman-Pines, Francis, & Gibson-Davis, 2011; Barling, Dupre, & Hepburn, 1998; Barling, Zacharatos, & Hepburn, 1999; Hamilton, Noh, & Adlaf, 2009; Mistry, Benner, Tan, & Kim, 2009).

The economic climate affecting the U.S. economy at the end of the past decade offers a new opportunity to extend and refine this theoretical model. First, as has been widely reported, this period saw record levels of employment instability (Greenstone & Looney, 2010), income losses (DeNavas-Walt, Proctor, & Smith, 2012), home mortgage foreclosure and delinquency (Mortgage Bankers Association, 2010), and food insecurity (Coleman-Jensen, Nord, Andrews, & Carlson, 2012). Given these stark figures, it is not surprising that large numbers of American families felt high levels of economic strain during the Great Recession (Gauthier & Furstenberg, 2010). Nevertheless, there is a limited understanding of the association between economic events and experiences and children's adjustment among contemporary families.

Furthermore, as noted, most prior formulations of this model have emphasized the central role of objective events relating to the worker-earner role (i.e., job or income loss) in producing subjective perceptions of economic strain (Conger et al., 1990; Voydanoff, 1990). In other words, such studies adopt the premise that economic strain is a function of families' exposure to, say, income or unemployment loss. In contrast, we argue that economic strain during the Great Recession may be less coupled to objective markers of economic conditions than has historically been true. Gauthier and Furstenberg (2010) showed that the correlation between these phenomena is positive but far from perfect during the Great Recession. Perceptions of economic strain need not arise from respondents' own experiences of employment or income loss. Individuals' perceptions of the economic climate may be shaped by events affecting one's friends and family, by reports in the media, or by interactions in one's neighborhood, workplace, or social environment.

Indeed, data collected during the Great Recession suggest widespread and high levels of perceived economic strain (Petev & Pistaferri, 2012). In a national survey, fully 30% of parents in the top decile of the income distribution reported feeling economically strained; furthermore, about half of respondents who reported feeling economically strained report no problems paying for rent, utilities, food, or health care or repaying loans (Gauthier & Furstenberg, 2010).

This evidence suggests that much of the widespread economic strain reported by families after the Great Recession did not arise as much from individual-specific economic conditions as it did from uncertainty about the future. If true, this implies that economic strain in the contemporary economic period may be qualitatively distinct from objective measures of economic conditions. Findings supporting this hypothesis would contrast with the traditional formulation in psychology and sociology that treats economic strain as endogenous to objective economic indicators (Conger et al., 1990, 2010; Conger & Donnellan, 2007). In the research reported in this article, we investigated this question by testing a model in which economic strain was the key predictor of children's behavior problems, and objective measures of economic conditions (e.g., unemployment, food insecurity, housing instability) were treated as

control variables. Following Voydanoff (1990), our measure of economic strain reflected respondents' perceptions of their families' financial security, adequacy of household income, and change over time in financial situation.

We used data from a representative sample of families collected in the summer of 2009 in the Detroit, Michigan, metropolitan area—arguably one of the U.S. communities hardest hit by the recession (RealtyTrac, 2010; U.S. Bureau of Labor Statistics, 2013). Mirroring national trends, Detroit-area Black families have been disproportionately affected by the recession (Austin, 2012).

## METHOD

### *Data and Sample*

We used the Michigan Recession and Recovery Study (MRRS)—a population-based survey of the Detroit metro area led by investigators at the University of Michigan (see [www.npc.umich.edu/research/recessionsurvey/](http://www.npc.umich.edu/research/recessionsurvey/))—to create the sampling frame. The first wave of the MRRS (Wave 1 [W1]) was fielded in late 2009–early 2010, and a subsequent wave (Wave 2 [W2]) was fielded in late 2011–early 2012; in combination, the two waves collected detailed employment and income histories for the time period spanning 2008–2012. Further details regarding the scientific aims and sample design of the MRRS are described in Burgard, Kalousova, and Seefeldt's (2012) and Burgard, Seefeldt, and Zelner's (2012) articles.

We conducted a substudy that was fielded as part of W2 of the MRRS. The goal of our data collection effort, the Child and Youth Study (MRRS-CYS), was to assess how children were faring in the aftermath of the Great Recession. MRRS households were selected for inclusion into the MRRS-CYS if a child between the ages of 0 and 17 resided in the household at W1. Because of budget constraints, no more than two children per household were included in the MRRS-CYS sample. For larger families, one child between the ages of 1 and 8 and one child between the ages of 9 to 17 were selected for study inclusion. We randomly selected one child per age strata in households with more than one child in one or both of these age ranges. As is standard practice in population-based surveys (e.g., the Child Development Supplement to the Panel Study of Income Dynamics; Institute for Social Research, 2010), the MRRS-CYS used

primary caregiver (PCG) reports of child outcome measures. On completion of the MRRS instrument, the household respondent was given instructions to have the (self-identified) PCG of each sample child complete the MRRS-CYS instrument and mail it back to the investigators. The instrument was tailored to the sample child's age and contained child-level measures on physical and behavioral health and educational outcomes in addition to family-level measures on family processes and expenditures related to children. A response rate of 82% was achieved among the MRRS households eligible for inclusion in the MRRS-CYS, resulting in a total sample size of 415 children from 269 households. Of these sample children, 350 met the age inclusion criteria for the current study (age > 3 years old); the analytic sample was limited to the 303 children who had complete information on all variables of interest. Child-level data collected from the (W2) MRRS-CYS were merged with household-level data from W2 of the MRRS to create the final analytic sample.

### *Measures*

*Behavioral outcomes.* We assessed *problem behavior* using the Behavior Problems Index (Peterson & Zill, 1986), which was constructed from the more expansive Child Behavior Checklist (Achenbach, 1991). Because these items were not designed for use among very young children, the MRRS-CYS limited their administration to sample children between the ages of 4 and 17. To compute scores for the separate Internalizing and Externalizing behavior subscales, PCG responses to each item (0 = "not true of my child," 1 = "sometimes/often true of my child") were summed (Internalizing:  $\alpha = .84$ , Externalizing:  $\alpha = .87$ ). Higher scores indicated more behavior problems; the Internalizing subscale ranged from 0 to 13 within the sample, and the Externalizing subscale ranged from 0 to 15.

*Economic strain.* The key independent variable of interest was the PCG's perception of whether the sample household was experiencing *economic strain* at the time of the interview. Both the MRRS (W1 and W2) and the MRRS-CYS (W2) asked the household respondent or the PCG respondent, respectively, the following four survey items: (1) "Which of the following best describes how you see yourself? Do you see yourself as ..." (0 = "very financially secure,"

1 = "somewhat financially secure," 2 = "in some financial trouble," 3 = "in deep financial trouble"), (2) "How difficult is it for you to live on your household income right now?" (0 = "not all difficult," 1 = "somewhat difficult," 2 = "very difficult," 3 = "extremely difficult"), (3) "Compared to a year ago, would you say your household's financial situation today has greatly improved, somewhat improved, remained the same, somewhat deteriorated, or greatly deteriorated?" (0 = "greatly improved," 1 = "somewhat improved," 2 = "remained the same," 3 = "somewhat deteriorated," 4 = "greatly deteriorated"), and (4) "Which of the following options best represents how much money you have left over at the end of the month?" (0 = "some money left over," 1 = "just enough money to make ends meet," 2 = "not enough money to make ends meet").

The four items exhibited sufficient internal consistency to be combined into a single summary measure ( $\alpha = .80$ ); accordingly, we summed the values of the responses to each component item to create an economic strain index, which exhibited the entire possible value range (0–12) in the analytic sample.

*Objective measures of adverse economic conditions.* As noted, a primary study aim was to assess whether the subjective perception of economic strain showed a distinct correlation with child behavior independent of any influence arising from its correlation with objective measures of adverse economic conditions. First, we created a dichotomous measure reflecting *recent parental unemployment* (1 = at least one parental unemployment spell, 0 = no parental unemployment spell), which was measured in the MRRS-CYS via a series of questions that assessed whether any parent responsible for the sample child (whether residential or nonresidential) had experienced a spell of unemployment between W1 and W2. *Food insecurity* was included as an additional measure of adverse economic conditions. A dichotomous indicator was created reflecting food insecurity status (1 = food insecure, 0 = food secure), which was measured using a six-item short form designed by the U.S. Department of Agriculture (2012). We also included a dichotomous indicator reflecting whether the *household's net worth* (total assets – total debt) was negative, as reported in the main MRRS survey. *Residential instability* comprised the final measure of

adverse economic conditions, operationalized as having moved at least once between W1 and W2 (1 = moved at least once, 0 = did not move). Ideally, we would have been able to use a more refined measure that captured multiple moves; however, there were insufficient numbers of White sample children with multiple moves ( $n < 10$ ) to adopt this preferred approach.

*Psychosocial context.* Following the guiding theoretical model in this research area (Conger & Donnellan, 2007) we hypothesized that PCG psychosocial well-being and the family emotional climate served as potential correlates influencing the association between economic strain and children's problem behavior. Measures of caregiver psychosocial well-being included depressive symptoms and parenting stress. The nine-item Patient Health Questionnaire (PHQ-9) was used to measure depressive symptoms (Kroenke, Spitzer, & Williams, 2001;  $\alpha = .88$ ). The items assessed how often during the past 2 weeks a respondent had reported feeling certain depressive symptoms (e.g., having little interest or pleasure in doing things) and were scored using four categories (0 = "not at all," 1 = "several days," 2 = "more than half the days," 3 = "nearly every day"). Sample values ranged from the lowest to the highest possible scale values (0–27). *Parenting stress* was measured using an eight-item scale adapted from the Abidin Parenting Stress Index (Abidin, 1990). The following is an illustrative sample item: "How often do you find yourself thinking that being a parent or caretaker is much more work than pleasure?" Each item's answers ranged across the following response options: 0 = "never," 1 = "rarely," 2 = "sometimes," 3 = "often," and 4 = "almost always" ( $\alpha = .81$ ). Items were coded so that the scale was increasing in reported levels of parenting stress, with possible values ranging from 0 to 32 (sample minimum = 0, sample maximum = 29). Finally, we included a five-item scale reflecting *family conflict* ( $\alpha = .76$ ), adapted from measures initially included in the National Survey of Families and Households (Sweet, Bumpass, & Call, 1988). Each item asked the respondent to report the extent of his or her agreement with a specific measure of conflict (e.g., "We fight a lot in our family"); candidate responses included 0 = "strongly agree," 1 = "agree," 2 = "neither agree nor disagree," 3 = "disagree," 4 = "strongly disagree." Again, items were



coded such that the scale was increasing in levels of conflict; sample values ranged across the entire possible scale (0–20).

*Sociodemographic covariates.* We included as controls a series of measures representing caregiver-, child-, and household-level sociodemographic characteristics. Specific measures included were the *household income-to-needs ratio*, which was categorized as follows: greater than 3 (reference category), between 2 and 3, between 1 and 2, and less than 1; *PCG marital status*, which was treated as a dichotomous indicator (1 = married, 0 = not married); *PCG educational attainment*, which was categorized as follows: college degree or higher (reference category), some postsecondary education, high school diploma/equivalency, and no high school diploma/equivalency; the *gender of the PCG*, which was dichotomized as 0 = female, 1 = male; the *sample child's gender* (0 = female, 1 = male) and *age in years*; and the *PCG-reported health status of the sample child* (0 = "excellent, very good, or good," 1 = "fair or poor"). As we discuss below, all analyses were stratified by race of the householder; the analytic sample was populated entirely by White and Black households; therefore, each analysis was performed for these two specific racial strata.

### *Analytic Strategy*

We first computed the complete set of correlation coefficients among child behavior problems, the economic strain index, measures of adverse economic conditions, and the psychosocial contextual measures. Second, both child behavioral outcomes were regressed onto the economic strain index using ordinary least squares (OLS; Model 1). Three additional OLS specifications were estimated, each layering in a block of additional regressors. The first multivariate specification (Model 2) controlled for the set of sociodemographic covariates, the second specification (Model 3) augmented the set of regressors with the measures of adverse economic conditions, and the final model (Model 4) added in the block of psychosocial contextual measures. It is important to note that we consider the second multivariate specification (Model 3) as constituting the preferred estimates. Because we lacked sufficient statistical power and our data were cross-sectional, we did not treat the final specification as a formal test for mediation.

Instead, we offer the resulting estimates in the spirit of providing exploratory guidance for future work seeking to perform such formal tests.

Prior work with the MRRS data demonstrated that Black and White sample members experienced vast differences in the prevalence rates of adverse economic conditions such as unemployment and negative net worth over the study period (Chiteji & Danziger, 2011), and that these objective measures of adverse economic conditions were differentially associated with subjective assessments of economic strain across the two races (Gould-Werth & Burgard, 2012). Accordingly, we ran all of our analyses stratified by race, which allowed for the estimation of any potential race-specific differences in the interplay between economic strain and children's behavior problems. Hypothesis testing regarding the equality of coefficients across White and Black samples was performed using adjusted Wald tests. All estimates were weighted to reflect differential sample selection probabilities and differential nonresponse in the MRRS-CYS. Estimates were also cluster corrected at the household level to account for shared variance within sibling pairs.

We implemented our OLS models using *seemingly unrelated estimation* (SUE; Weesie, 1999). SUE facilitated hypothesis testing regarding differences in the coefficients of regressors across the Black and White samples. It is important to note that SUE allowed for hypothesis testing regarding the equality of a specific regression coefficient across samples (akin to significance testing of an interaction term) in addition to omnibus testing of blocks of regression coefficients across samples (including the entire set of coefficients, as in done in a Chow test; Chow, 1960). Operationally, the SUE approach was similar to running separate OLS regressions for White children and Black children; the primary distinction between the two methods is that the SUE approach accounted for the correlation across the error terms of the two samples, resulting in efficiency gains relative to naïve OLS (Clogg, Petkova, & Haritou, 1995). Unfortunately, statistical software packages do not support either the reporting of standardized coefficients for SUE with complex survey data or the use of multiple imputation. To account for the former concern, we report the raw beta coefficients and interpret the key coefficients of interest in terms of standard deviation units, and,

Table 1. Descriptive Statistics (N = 303)

Variables	Pooled sample ( <i>N</i> = 303)		By race				<i>F</i> / $\chi^2$
			White ( <i>N</i> = 114)		Black ( <i>N</i> = 189)		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Dependent variables							
BPI Internalizing (0–13 scale)	3.17	3.16	3.28	3.40	3.03	3.02	
BPI Externalizing (0–15 scale)	6.36	4.27	6.16	4.56	6.49	4.09	
Exposure							
Economic strain (0–12 scale)	6.47	2.91	5.58	2.94	7.01	2.76	**
Child-level sociodemographic characteristics							
Age	10.63	4.10	10.73	4.33	10.57	3.96	
Male (%)	49.27		48.02		51.50		
Not living with both parents (%)	38.63		19.52		73.02		**
In fair/poor health (%)	2.54		1.71		4.02		
PCG-level sociodemographic characteristics							
PCG is married (%)	66.42		83.20		36.22		**
PCG is male (%)	12.72		14.11		10.20		
PCG education (%)							**
< HS diploma/equivalency	8.81		3.04		19.18		
HS diploma/equivalency	17.68		11.47		28.87		
Some postsecondary education	25.79		22.20		32.26		
College degree or higher	47.72		63.29		19.70		
Household income-to-needs characteristics							
Income to needs ratio (%)							**
Less than 1	21.91		4.67		52.94		
1 to 2 (exclusive)	18.90		17.23		21.9		
2 to 3 (exclusive)	10.28		10.79		9.37		
3 or higher	48.91		67.31		15.79		
Household economic instability							
Food insecure (%)	14.15		4.85		30.90		**
Either parent experienced unemployment in past 2 years (%)	41.77		30.89		61.36		**
Moved in past 2 years (%)	21.97		8.61		46.04		**
Negative net worth (%)	56.17		51.96		63.75		
PCG-reports of psychosocial context							
PCG depression (0–27 scale)	5.91	5.87	5.22	5.08	6.32	6.27	
PCG parenting stress (0–32 scale)	13.00	5.38	13.49	5.61	12.71	5.22	
Family conflict (0–20 scale)	6.69	4.04	5.85	3.89	7.19	4.05	*

Note: BPI = Behavior Problems Index; PCG = primary caregiver; HS = high school.

\**p* < .05. \*\**p* < .01.

to account for the latter concern, we performed a robustness analysis implementing naïve OLS regression on multiply imputed data. We found it reassuring that the results were robust across our preferred SUE specification and the naïve OLS specification using multiple imputation (results available on request).

RESULTS

Sample Description

Descriptive statistics for both the pooled analytic sample and separate race strata are displayed in Table 1. There were no meaningful racial

differences along the mean values of children’s internalizing and externalizing behaviors. In contrast, perceptions of economic strain, reports of adverse economic conditions, and socioeconomic covariates exhibited strikingly different profiles across children in White and Black families. Illustratively, the mean value of the economic strain index was 0.5 SD lower for White families relative to Black families; correspondingly, the median index value and interquartile ranges were also higher for Blacks (see the associated histograms in Figure A1). These patterns were mirrored in the distribution of income and adverse economic conditions:

Approximately 5% of White children lived in families with an income-to-needs ratio lower than 1, compared with 53% of Black children. Black families were six times more likely than White families to report food insufficiency (31% vs. 5%), were five times more likely to report recent residential instability (46% vs. 9%), and were almost twice as likely to have experienced parental unemployment in the past 2 years (61% vs. 31%). White and Black sample children had comparable age and gender distributions but differed in their likelihood of living with a married PCG, with 83% of White children living with a married PCG compared to 36% of Black children. Reported family conflict was approximately 0.34 SD higher in Black families relative to White families; no statistically significant differences were present in the remaining psychosocial contextual mediators.

### *Bivariate Correlations*

The results from the bivariate correlation analysis are presented in Table A1; the top panel displays correlations for White sample members, and the bottom panel displays correlations for Black sample members. The highest correlation for both the White and Black samples was that between internalizing and externalizing behavior problems ( $r_s = .73$  for White children and  $.76$  for Black children, both significant at  $p < .01$ ); given this high correlation between the two outcome measures, it is interesting and perhaps surprising that the magnitude of the correlation between behavior problems and the economic strain index was of appreciably different magnitudes across behavior types. For both White and Black children, the correlation was considerably higher for internalizing relative to externalizing behaviors.

We found a statistically significant correlation between the economic strain index and the adverse economic condition measures of negative net worth and parental unemployment for both samples. Of note, however, is that the magnitudes of all but one of these correlations fell within the negligible to low ranges of common rules of thumb regarding correlational strength (see, e.g., Hinkle, Wiersma, & Jurs, 2003), providing suggestive evidence for our hypothesis that although objective measures of adverse economic conditions do exhibit some correlation with subjective perceptions of economic strain, the two types of measures

likely represent distinct constructs. Further preliminary evidence supporting this claim is presented in Figure A2, which displays the histogram of the economic strain index stratified by household income-to-needs category. Whereas sample members in the highest income-to-needs category exhibited appreciably lower mean economic strain levels relative to the other categories, it is not the case that economic strain was monotonically patterned across income categories, as near-poor households (those with income-to-needs ratios between 1 and 2) experienced the highest levels of economic strain, even relative to poor households (those with income-to-needs ratios below 1). Moreover, there was considerable overlap in the distribution of economic strain across income categories.

In contrast to expectations, residential instability exhibited no correlation with the economic strain index. Given the limitations of the residential instability measure (discussed above), these results should be interpreted with caution. No clear pattern emerged regarding the relationship between objective measures of adverse economic conditions and behavior problems.

### *Regression Analyses*

Results from the models predicting children's internalizing and externalizing behavior problems are reported in Table 2. Economic strain was positively associated with internalizing behavior problems for Whites across all specifications. The parameter estimate on the preferred specification (Model 3) implies that a 1-SD increase in the economic strain index was associated with a 0.41-SD increase ( $[0.47 \times 2.94]/3.40$ ) in the internalizing behavior problems scale ( $p < .01$ ).

Contrary to the suggestive correlational evidence in Table A1, the association between economic strain and children's internalizing behavior problems was not attenuated by sociodemographic covariates or the objective measures of adverse economic conditions among the sample of White children, and it was only slightly attenuated by the inclusion of psychosocial contextual covariates. The robustness of the magnitude of the parameter estimates across model specifications provides compelling evidence that economic strain exerts a meaningful independent influence on White children's internalizing behavior problems.

In contrast, for Black sample children we found evidence that the bivariate relationship

Table 2. Regression-Adjusted Association Between Economic Strain and Problem Behavior

Specification	BPI Internalizing			BPI Externalizing		
	Whites	Blacks	H <sub>0</sub> : Beta <sub>W</sub> = Beta <sub>B</sub>	Whites	Blacks	H <sub>0</sub> : Beta <sub>W</sub> = Beta <sub>B</sub>
1. Unadjusted	0.42** [0.14, 0.71]	0.26** [0.08, 0.44]	$p < .32$	0.33 [−0.07, 0.73]	0.31* [0.04, 0.58]	$p < .91$
2. Controlling for sociodemographics	0.51** [0.19, 0.84]	0.16 [−0.03, 0.35]	$p < .06$	0.34 [−0.12, 0.81]	0.13 [−0.13, 0.40]	$p < .43$
3. Controlling for sociodemographics + objective economic conditions	0.47** [0.13, 0.80]	0.15 [−0.05, 0.34]	$p < .11$	0.36 [−0.14, 0.85]	0.11 [−0.16, 0.39]	$p < .39$
4. Controlling for sociodemographics + objective economic conditions + psychosocial context	0.39* [0.04, 0.73]	−0.02 [−0.21, 0.16]	$p < .04$	0.12 [−0.23, 0.48]	−0.14 [−0.38, 0.11]	$p < .23$

Note: *N* = 114 for Whites; *N* = 189 for Blacks. Numbers in brackets are 95% confidence intervals. Results represent the focal regression coefficient from 16 separate regressions nested within eight separate seemingly unrelated systems. The specific vectors of sociodemographic, economic instability, and psychosocial context controls are enumerated in Table 1.

\**p* < .05. \*\**p* < .01.

between economic strain and internalizing behavior problems disappears once sociodemographic, adverse economic condition, and psychosocial contextual measures are included as additional regressors. In particular, the significant bivariate relationship was largely attenuated once sociodemographic characteristics were added in Model 2. None of the coefficients of interest reached statistical significance at the 5% level in the multivariate specifications represented by Models 2, 3, and 4, although the parameter estimate in Model 2 was significant at the 10% level. For Model 2 and Model 4 we formally rejected the null hypothesis that the coefficient of interest is equal across the White and Black samples at the 10% level or better, and the associated *p* value for Model 3 trends toward but does not meet commonly accepted thresholds of statistical significance (*p* < .11).

The regression-adjusted relationship between economic strain and externalizing problems among White sample children was less robust than that seen for internalizing behaviors. Taken together, the results across models were indicative of a positive but statistically insignificant association between economic strain and externalizing behavior problems in Whites. Moreover, the magnitude of the association was smaller than that for internalizing behaviors, with the parameter estimate from the preferred

specification implying that a 1-SD increase in the economic strain index was associated with a 0.23-SD increase ([0.36 × 2.94]/4.56) on the Externalizing Behavior Problems subscale. Echoing the results for internalizing behaviors, the bivariate relationship between economic strain and externalizing behaviors among Black sample children were completely attenuated once sociodemographic measures were included in the model. Although the magnitude of the key coefficient estimate was considerably different across the White and Black samples in Models 2, 3, and 4, this White–Black difference in coefficients was statistically insignificant for all specifications.

For each of the covariate-adjusted seemingly unrelated systems represented in Table 2 we rejected the null hypothesis that the full set of regression coefficients was equal for White versus Black sample members at the 10% level or better for internalizing behaviors (results available on request), substantiating the empirical approach of estimating separate OLS equations for each race. No such significant differences were found for externalizing behaviors, which is perhaps unsurprising given the imprecision of the parameter estimates in both racial subgroups.

Whereas economic strain exhibited a robust regression-adjusted relationship with internalizing behaviors among White children, none



of the objective measures of adverse economic conditions exhibited a statistically significant association with internalizing behaviors for children of either race (coefficients listed in Table A2). This provides suggestive evidence substantiating our hypothesis that economic strain is likely a distinct construct from objective measures of adverse economic conditions in the production of child well-being. Furthermore, parental job loss—but not economic strain—exhibited a statistically significant regression-adjusted association with externalizing behaviors among Black sample children, with the sign of the relationship suggesting a positive correlation (see Table A2). Again, we regard this finding as substantiating our treatment of economic strain as a correlated but distinct construct from objective measures of adverse economic conditions in addition to substantiating our stratified analytic approach.

Also of note is that shared method variance between PCG report of economic strain and children's behavior may serve as a potential threat to construct validity. It is possible, for example, that a PCG with low self-efficacy might perceive more economic strain and perceive higher levels of behavior problems in his or her child than a more efficacious PCG, rendering the association between economic strain and child behavior a mere artifact of PCG perception. To provide heuristic evidence regarding this concern, we exploited the fact that for 56 sample children we had a measure of family economic strain reported by both a PCG and by an additional adult family member. This situation arose when the respondent to the main MRRS survey was not the PCG of sample children in the MRRS-CYS sample. It is reassuring that the regression-adjusted relationship between internalizing behavior problems and economic strain exists and was statistically significant for White—but not Black—children when we substituted MRRS respondent reports of economic strain in place of PCG reports for this subsample (results available on request).

## DISCUSSION

Large shares of the U.S. population at all income levels experienced economic strain during the Great Recession and its aftermath. Evidence to date suggests that this economic strain did not arise as much from recent individual-specific adverse economic events as it did from uncertainty about the future (Gauthier & Furstenberg,

2010). This implies that economic strain in the contemporary economic period may be conceptually distinct from objective indicators of adverse economic events.

Our results support the proposition that a new conceptual model may describe families experiencing the economic strains of the Great Recession. But this model may best apply to White families. Specifically, we found that economic strain exhibited a statistically significant and qualitatively large association with White children's internalizing behavior problems and that this relationship was not due to potentially correlated influences of objective measures of adverse economic conditions or to mediating influences of psychosocial context. Furthermore, our data provide evidence that the relationship between economic strain and internalizing problems is meaningfully different across White and Black children. In marked contrast to the White sample, the regression-adjusted relationship between economic strain and internalizing behaviors among the Black sample was of small magnitude and was statistically insignificant. In both groups, the association between economic strain and children's externalizing behavior problems was relatively weak statistically.

Furthermore, and in contrast to conceptual models developed with data from a different economic era, the association between economic strain and White children's behavior problems was not driven by parents' depressive symptoms, parenting stress, or family conflict (although these measures themselves were significant correlates of children's behavior problems). This suggests a model in which children may respond directly to parents' perceptions of economic strain, perhaps because children too have developed the same worries and fears that affect their parents' outlook. More in-depth knowledge about the level of parent-child discussion of families' financial situations could be instructive. Another possibility is that parents respond to perceived deterioration in their financial situation with "belt-tightening" changes in their expenditure patterns that children find upsetting. These and other possible explanations nonetheless suggest a new conceptual model for the contemporary economic era.

A useful way to test this hypothesis further would be to examine child age as a moderator. Older children should be more perceptive and thus more aware of their families' financial strain. If the results showed or suggested that

associations were larger for older children, that would be consistent with a direct-effects story. Our sample size was too small to test this hypothesis, but it is a promising one for future research.

The fact that economic strain was a significant correlate of White, but not Black, children's behavior problems (once demographic characteristics were controlled) is notable given the significantly higher rates of economic strain in the Black population in our sample. As the regression results show, however, the bivariate relationship for Blacks was attenuated to nonsignificance once factors such as family income, marital status, and parental education were controlled. The full regression results show that the key predictor (and one of only a few that was significant) of behavior problems for Black children was family income-to-needs ratio, which was significant in the full model controlling for all other measures in the analysis. For Black families, the objective condition of low family income may represent a more permanent state of economic deprivation that takes a toll on children's behavior. Relatively higher rates of poverty characterized Black families before the Great Recession, but the recession exacerbated these disparities. For example, household income in 2011 was 7.0% lower for non-Hispanic Whites (from \$59,604 in 1999) but 16.8% lower for Blacks (from \$38,747 in 2000; DeNavas-Walt et al., 2012). In contrast, for Whites, whose family incomes are significantly higher, the signature feature of the Great Recession appears to be perceived deterioration of household finances and perceived difficulty living on current income independent of actual income level.

Several limitations deserve careful consideration. First, as mentioned several times above, the data are underpowered for the execution of formal mediation and/or moderation analyses. Second, we acknowledge the potential for omitted-variables bias in our cross-sectional design. Because we had neither longitudinal data nor a plausibly exogenous source of variation in economic strain, we were unable to assert that our relationship of interest is causal. We do believe, however, that the robustness of our results to various sets of control variables—specifically among White children—provides sufficient evidence to encourage further research.

Third, the shared method variance between PCG report of economic strain and children's

behavior may serve as a potential threat to construct validity. It is thus reassuring, although of course not definitive, that our robustness exercise using the non-PCG reports of financial strain is consistent with the main results.

Our results confirm prior reports that large shares of the population across the income spectrum experienced high rates of economic strain during the Great Recession. Our findings provide compelling evidence that, at least for White families, the study of economic strain is potentially even more relevant than a focus on discrete economic events in understanding the relationship between macroeconomic turbulence and child and adolescent behavior problems.

#### NOTE

This study was supported by funds provided to the National Poverty Center at the University of Michigan by the Office of the Assistant Secretary for Planning and Evaluation at the U.S. Department of Health and Human Services and by the Office of the Vice President for Research, University of Michigan, and by grants from the John D. and Catherine T. MacArthur Foundation, the Annie E. Casey Foundation, the Ford Foundation, and the NORC/University of Chicago Population Research Center. We thank Sheldon Danziger for his leadership on the project.

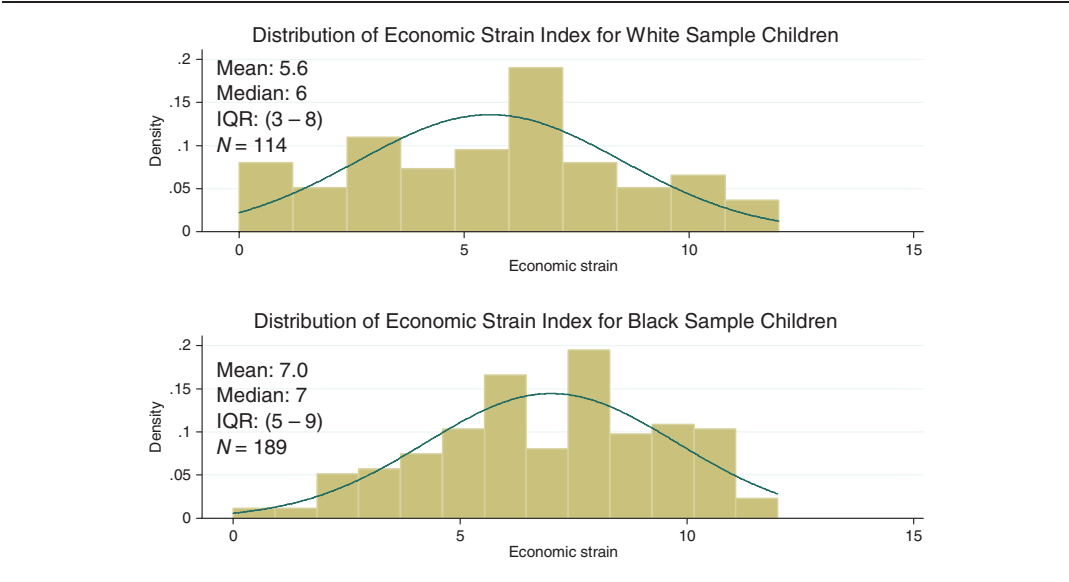
#### REFERENCES

- Abidin, R. R. (1990). *The Parenting Stress Index Short Form*. Charlottesville, VA: Pediatric Psychology Press.
- Achenbach, T. M. (1991). *Manual for Child Behavior Checklist/4-18 and 1991 Profile*. Burlington: University of Vermont.
- Ananat, E. O., Gassman-Pines, A., Francis, D. V., & Gibson-Davis, C. M. (2011). *Children left behind: The effects of statewide job loss on student achievement*. Working Paper No. 17104, National Bureau of Economic Research, Cambridge, MA.
- Austin, A. (2012). *Black metropolitan unemployment in 2011*. Economic Policy Institute Race and Ethnicity Report. Retrieved from [www.epi.org/publication/ib337-black-metropolitan-unemployment/](http://www.epi.org/publication/ib337-black-metropolitan-unemployment/)
- Barling, J., Dupre, K. E., & Hepburn, G. C. (1998). Effects of parents' job insecurity on children's work beliefs and attitudes. *Journal of Applied Psychology*, 83, 112–118.
- Barling, J., Zacharatos, A., & Hepburn, G. C. (1999). Parents' job insecurity affects children's academic performance through cognitive difficulties. *Journal of Applied Psychology*, 84, 437–444.
- Burgard, S. A., Kalousova, L., & Seefeldt, K. S. (2012). Perceived job insecurity and health: The Michigan Recession and Recovery Study. *Journal of Occupational and Environmental Medicine*, 54, 1101–1106.

- Burgard, S. A., Seefeldt, K. S., & Zelner, S. (2012). Housing instability and health: Findings from the Michigan Recession and Recovery Study. *Social Science & Medicine*, 75, 2215–2224.
- Chiteji, N., & Danziger, S. (2011). *Family finances after the Great Recession—Evidence from the Michigan Recession and Recovery Study*. Working Paper No. 11-21, National Poverty Center, University of Michigan.
- Chow, G. C. (1960). Tests of equality between sets of coefficients in two linear regressions. *Econometrica*, 28, 591–605.
- Clogg, C. C., Petkova, E., & Haritou, A. (1995). Statistical methods for comparing regression coefficients between models. *American Journal of Sociology*, 100, 1271–1293.
- Coleman-Jensen, A., Nord, M., Andrews, M., & Carlson, S. (2012). *Household food security in the United States in 2011*. Economic Research Report No. 141, U.S. Department of Agriculture, Washington, DC.
- Conger, R. D., Conger, K. J., & Martin, M. (2010). Socioeconomic status, family processes, and individual development. *Journal of Marriage and Family*, 72, 685–704.
- Conger, R. D., & Donnellan, M. B. (2007). An interactionist perspective on the socioeconomic context of human development. *Annual Review of Psychology*, 58, 175–199.
- Conger, R., Elder, G., Jr., Lorenz, F., Conger, K., Simons, R., Whitbeck, L., . . . Melby, J. (1990). Linking economic hardship to marital quality and instability. *Journal of Marriage and the Family*, 52, 643–656.
- DeNavas-Walt, C., Proctor, B., & Smith, J. (2012). *Income, poverty, and health insurance coverage in the United States: 2011*. Current Population Report No. P60-243, United States Census Bureau. Retrieved from [www.census.gov/prod/2012pubs/p60-243.pdf](http://www.census.gov/prod/2012pubs/p60-243.pdf)
- Gauthier, A. H., & Furstenberg, F. F. (2010). *The experience of financial strain among families with children in the United States*. Working Paper No. 10-17, National Center for Family & Marriage Research, Bowling Green State University, Bowling Green, OH.
- Gould-Werth, A., & Burgard, S. A. (2012). *Employment problems in the wake of the Great Recession: Findings from the Michigan Recession and Recovery Study*. National Policy Center Policy Brief No. 30, University of Michigan, Ann Arbor.
- Greenstone, M., & Looney, A. (2010). *An economic strategy to renew American communities*. Retrieved from <http://economics.mit.edu/files/6047>
- Hamilton, H., Noh, S., & Adlaf, E. (2009). Perceived financial status, health, and maladjustment in adolescence. *Social Science & Medicine*, 68, 1527–1534.
- Hinkle, D. E., Wiersma, W., & Jurs, S. G. (2003). *Applied statistics for the behavioral sciences* (5th ed.). Boston: Houghton Mifflin.
- Institute for Social Research. (2010). *The Panel Study of Income Dynamics Child Development Supplement: User guide supplement for CDS-I*. Ann Arbor, MI: Author.
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, 16, 606–613.
- Mistry, R. S., Benner, A. D., Tan, C. S., & Kim, S. (2009). Family economic pressure and academic well-being among a sample of Chinese-American youth: The influence of teens' perceptions of economic strain. *Journal of Family Psychology*, 23, 279–290.
- Mortgage Bankers Association. (2010). *Delinquencies and loans in foreclosure decrease, but foreclosure starts rise in latest MBA National Delinquency Survey* [Press release]. Retrieved from [www.mbaa.org/NewsandMedia/PressCenter/74733.htm](http://www.mbaa.org/NewsandMedia/PressCenter/74733.htm)
- Peterson, J. L., & Zill, N. (1986). Marital disruption, parent-child relationships, and behavior problems in children. *Journal of Marriage and the Family*, 48, 295–307.
- Petev, I., & Pistaferri, L. (2012). *Consumption in the Great Recession*. A Great Recession Brief, The Russell Sage Foundation and The Stanford Center on Poverty and Inequality. Retrieved from [https://www.stanford.edu/group/recessiontrends/cgi-bin/web/sites/all/themes/barron/pdf/Consumption\\_fact\\_sheet.pdf](https://www.stanford.edu/group/recessiontrends/cgi-bin/web/sites/all/themes/barron/pdf/Consumption_fact_sheet.pdf)
- RealtyTrac. (2010). *Michigan real estate trends, October 2010*. Retrieved from <http://realtytrac.com/trendcenter/mi-trend.html>
- Sweet, J. A., Bumpass, L. L., & Call, V. (1988). *The design and content of the National Survey of Families and Households*. NSFH Working Paper No. 1, Center for Demography and Ecology, University of Wisconsin—Madison.
- U.S. Bureau of Labor Statistics. (2013). Economic news release. Retrieved April 10, 2013, [www.bls.gov/news.release/metro.t01.htm](http://www.bls.gov/news.release/metro.t01.htm)
- U.S. Department of Agriculture. (2012). *U.S. Household Food Security Survey Module: Six-item short form*. Economic Research Service. Retrieved from [www.ers.usda.gov/datafiles/Food\\_Security\\_in\\_the\\_United\\_States/Food\\_Security\\_Survey\\_Modules/short2012.pdf](http://www.ers.usda.gov/datafiles/Food_Security_in_the_United_States/Food_Security_Survey_Modules/short2012.pdf)
- Voydanoff, P. (1990). Economic distress and family relations: A review of the eighties. *Journal of Marriage and the Family*, 52, 1099–1115.
- Weesie, J. (1999). Seemingly unrelated estimation and the cluster-adjusted sandwich estimator. *Stata Technical Bulletin*, 52, 34–47.

APPENDIX

FIGURE A1. DISTRIBUTION OF ECONOMIC STRAIN BY RACE.



Note: IQR = interquartile range.

FIGURE A2. DISTRIBUTION OF ECONOMIC STRAIN BY HOUSEHOLD INCOME-TO-NEEDS RATIO.

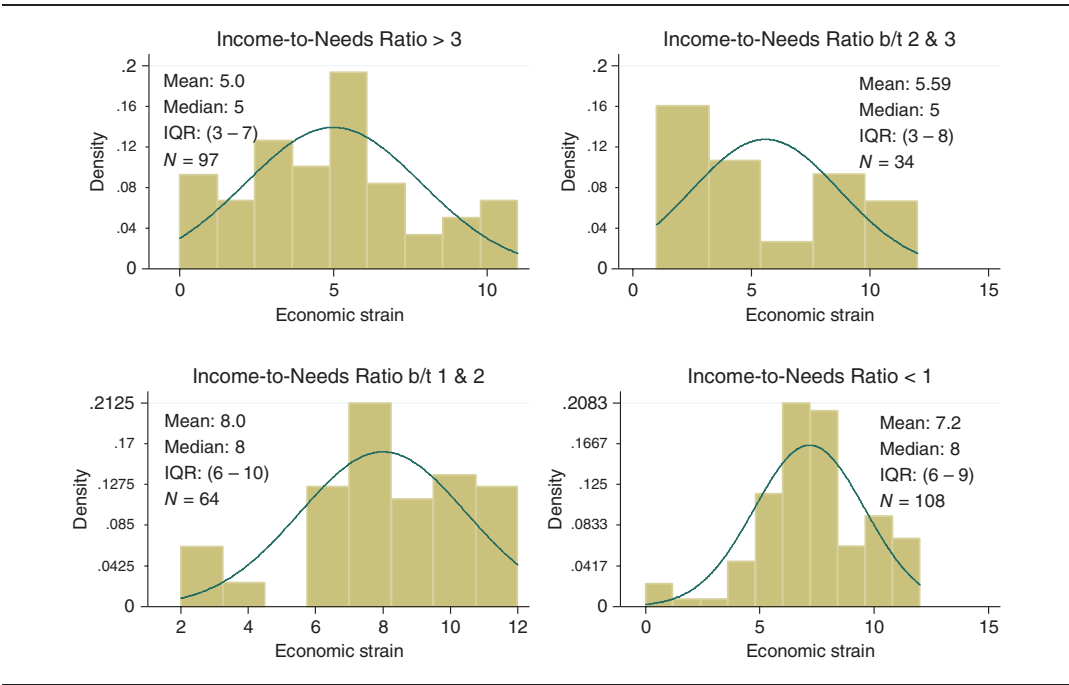


Table A1. Correlations Between Behavior Problems, Economic Strain, Objective Economic Conditions, and Psychosocial Context

Variable	1	2	3	4	5	6	7	8	9	10
White sample (N = 114)										
1. BPI Internalizing	—									
2. BPI Externalizing	.73**	—								
3. Economic strain	.30**	0.11	—							
4. Food insecure	.10	0.12	0.18	—						
5. Parental unemployment	.22*	0.11	.48**	.24**	—					
6. Moved	0.15	.20*	0.02	0.09	.20*	—				
7. Negative net worth	0.04	−.03	.29**	0.04	0.16	0.12	—			
8. PCG depression	.29**	.20*	.51**	.27**	.26**	0.01	0.18	—		
9. PCG parenting stress	.32**	.39**	−.03	.18*	0.15	−.04	−.18	.26**	—	
10. Family conflict	.41**	.42**	.24*	−.02	.25**	0.15	0.01	0.16	.22*	—
Black sample (N = 189)										
1. BPI Internalizing	—									
2. BPI Externalizing	.76**	—								
3. Economic strain	.19**	.14	—							
4. Food insecure	.05	.10	.22**	—						
5. Parental unemployment	.13	.25**	.18*	.22*	—					
6. Moved	.09	.12	−.07	.14	.02	—				
7. Negative net worth	.17	.10	.34**	.24**	.05	.16*	—			
8. PCG depression	.35**	.39**	.39**	.27**	.21**	.17*	.16*	—		
9. PCG parenting stress	.35**	.38**	.31**	.13	.15*	.01	.16*	.47**	—	
10. Family conflict	.31**	.30**	.21*	.15*	.16*	.21**	.27**	.44**	.22**	—

Note: BPI = Behavior Problems Index; PCG = primary caregiver. \* $p < .05$ . \*\* $p < .01$ .

Table A2. Regression Results for Model 4, Full Set of Coefficients

Variable	BPI Internalizing				BPI Externalizing			
	Whites		Blacks		Whites		Blacks	
	Beta	SE	Beta	SE	Beta	SE	Beta	SE
Economic strain	0.39	0.17*	−0.02	0.09	0.12	0.18	−0.14	0.12
Male	0.29	0.63	−0.02	0.38	1.65	0.74	0.12	0.49
Income-to-needs ratio between 2 & 3	−0.31	0.91	1.50	0.82	−0.48	1.99	2.36	1.15*
Income-to-needs ratio between 1 & 2	−1.31	1.06	1.84	0.89*	−0.53	1.52	2.14	1.18
Income-to-needs ratio < 1	−1.70	1.20	1.19	0.69	1.55	1.55	0.89	1.00
Living with 1 or 0 parents	1.72	1.72	−0.26	0.72	3.97	1.86*	1.35	0.80
PCG married	1.60	1.64	−0.34	0.66	2.69	2.05	0.13	0.84
Age	0.06	0.08	0.11	0.05*	−0.13	0.10	0.12	0.08
PCG < HS diploma	1.19	2.03	−0.49	0.75	1.32	2.09	−0.83	1.15
PCG HS diploma	−0.36	1.05	−0.54	0.66	−0.95	1.83	−1.35	0.90
PCG some college	−0.61	0.82	−0.86	0.52	0.61	0.95	−1.67	0.77*
PCG male	−0.12	0.94	−0.73	0.71	1.02	1.18	−0.12	0.93
Fair or poor health	7.34	2.02**	3.40	1.10**	3.91	2.07	4.69	1.16**
At least 1 parental unemployment spell since Wave 1	−0.01	0.81	0.15	0.43	−1.43	1.06	1.36	0.57*
At least 1 move since Wave 1	0.52	0.91	0.41	0.53	1.07	1.60	0.70	0.73
Food insecure	−0.70	1.65	−0.65	0.48	−1.55	2.29	−0.35	0.64
Negative net worth	0.00	0.76	0.23	0.41	−0.27	0.94	−0.40	0.63
PCG depression	0.03	0.09	0.07	0.06	0.17	0.11	0.07	0.06
Family conflict scale	0.31	0.09**	0.09	0.09	0.40	0.12**	0.07	0.10
PCG parenting stress scale	0.11	0.05*	0.16	0.05**	0.22	0.10*	0.26	0.06**

Note: N = 114 for Whites; N = 189 for Blacks. BPI = Behavior Problems Index; PCG = primary caregiver; HS = high school. \* $p < .05$ . \*\* $p < .01$ .