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Fathers' Involvement with Their Nonresident Children and Material Hardship

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Abstract

Children in single-parent families, particularly children born to unmarried parents, are at high risk for experiencing material hardship. Previous research based on cross-sectional data suggests that father involvement, especially visitation, diminishes hardship. This article uses longitudinal data to examine the associations between nonresident fathers' involvement with their children and material hardship in the children's households. Results suggest that fathers' formal and informal child support payments and contact with their children independently reduce the number of hardships in the mothers' households; however, only the impact of fathers' contact with children is robust in models that include lagged dependent variables or individual fixed effects. Furthermore, cross-lagged models suggest that material hardship decreases future father involvement, but future hardship is not diminished by father involvement (except in-kind contributions). These results point to the complexity of these associations and to the need for future research to focus on heterogeneity of effects within the population.

Today, more than one in four U.S. children (26 percent) lives with only one parent (U.S. Census Bureau 2010). Moreover, half of all children born in the last several decades are predicted to spend some portion of their childhood in a single-parent family (Bumpass and Sweet 1989). Further, 41 percent of all births today are to unmarried mothers, and that figure is nearly 70 percent among black mothers (Hamilton, Martin, and Ventura 2009). Although some children in single-parent families live with their fathers, the overwhelming majority (84 percent) live with their mothers and have a living nonresident father (U.S. Census Bureau 2010). Research suggests that children growing up in single-parent families, particularly children born to unmarried parents, are much more likely to be poor and to experience more material hardships than those in two-parent families (Lerman 2002; DeNavas-Walt, Proctor, and Smith 2008). As a consequence, children in single-parent families also face disadvantage in a number of important domains: health, development, and educational attainment (McLanahan and Sandefur 1994; Magnuson and Votruba-Drzal 2009).

Nonresident fathers' involvement in their children's lives, both through their financial contributions and their physical involvement, can ameliorate some of these disadvantages. Research suggests that child support payments from fathers increase income and reduce poverty in custodial mothers' households (Meyer and Hu 1999; Bartfeld 2000; Sorensen and Zibman 2000); however, other research suggests that payments from poor fathers are either too small or inconsistent to improve financial well-being in the mothers' household (Mincy and Sorensen 1998; Cancian and Meyer 2004b). Research also finds that child support

income is associated with such positive measures of child well-being as cognitive skills, educational attainment, and child behavior (Graham, Beller, and Hernandez 1994; Knox and Bane 1994; Hernandez, Beller, and Graham 1995; Knox 1996; Argys et al. 1998). Unfortunately, only a minority (approximately 20 percent) of unwed nonresident fathers pay formal child support (Nepomnyaschy and Garfinkel 2007), yet an overwhelming majority of these fathers are involved with their children in other ways. Examples of this involvement include informal and in-kind contributions, as well as regular contact with their children (Waller and Plotnick 2001; Huang 2006; Nepomnyaschy 2007; Garasky et al. 2010; Nepomnyaschy and Garfinkel 2010). Much less research focuses on how these contributions of time, money, and goods affect children's economic circumstances. This study examines the effects of these different types of father involvement on children's experience of material hardship.

Although poverty is the most commonly used indicator of serious economic distress, indicators of material hardship are complementary, and now commonly used, alternative measures (Beverly 2000, 2001). Such indicators include going without food, being evicted from one's home, delaying needed medical care, and having heat, electricity, or phone service shut off. These are not only important mediators of the relation between poverty and child well-being; they are found to be directly related to child well-being, and the relations are independent of income (Beverly 2001; Gershoff et al. 2007). For example, results from analyses that control for household income or poverty status find that children who live with food insecurity have worse health, lower cognitive skills, worse academic performance, and more behavior problems than those who do not live with food insecurity (Alaimo, Olson, and Frongillo 2001; Alaimo, Olson, Frongillo, and Briefel 2001; Cook et al. 2004; Ashiabi 2005; Slack and Yoo 2005; Whitaker, Phillips, and Orzol 2006; Rose-Jacobs et al. 2008; Zaslow et al. 2009). Some studies control for other indicators of socioeconomic status, pointing to the deleterious effects that multiple and cumulative hardships have on child well-being (Ashiabi and O'Neal 2007; Cook et al. 2008; Yoo, Slack, and Holl 2009; Frank et al. 2010).

How Father Involvement Affects Material Hardship

Low income is obviously one principal determinant of material hardship. Although material hardship disproportionately affects children living in poverty, 65 percent of families living between 100 and 200 percent of the poverty threshold are estimated to experience one or more hardships (Boushey et al. 2001; Gershoff 2003). Furthermore, the material hardship's respective correlations with income and poverty status are weaker than might be expected (Mayer and Jencks 1989; Cancian and Meyer 2004a; Short 2005; Sullivan, Turner, and Danziger 2008).¹ There are at least two reasons for the modest size of the correlations. First, current income (the measure on which poverty status is most often based) is not a comprehensive indicator of a family's economic circumstances. In-kind transfers are not counted as income, nor is wealth or access to credit. All three of these resources may enable families to avoid hardship during periods of unemployment or other shocks to income (Shapiro and Wolff 2001; Sullivan et al. 2008). So too, Kathryn Edin and Laura Lein (1997) show that low-income mothers use a number of survival strategies to avoid hardship. For example, they may rely on social programs, friends, family, and underground employment. None of these strategies is usually included in income measures. Second, material hardship may result not only from a lack of resources but also from difficulty managing those resources (Heflin, Corcoran, and Siefert 2007). For example, in analyses that control for income and other indicators of socioeconomic status, families in which there are members

¹As a measure of family well-being, material hardship is also superior to poverty status because hardship captures effects on the nonpoor.

with drug problems, alcohol problems, depression, or other indicators of poor mental health are found to experience more material hardship than families in which members lack those characteristics (Heflin et al. 2007; Sullivan et al. 2008). Fathers' contributions of time, goods, and money can affect mothers' resources and their ability to manage such resources.

Fathers' Material Contributions and Children's Hardship

Nonresident fathers' material contributions consist of formal cash support (that is paid through the formal child support system), informal cash support (cash that is given outside the formal obligation), and noncash support (in-kind contributions). Edin and Lein (1997) describe the numerous ways in which mothers use contributions from fathers to improve the economic circumstances in their households. For example, nonresident fathers' material support, whether it is provided through formal support, informal cash payments, or in-kind contributions, can directly affect the level of hardship in the mothers' house and can increase the household's income. Because cash contributions supplement the mother's income, they can readily be used to pay rent, utilities, and other bills, as well as to purchase food, clothing, and other necessities. Fathers' in-kind contributions can directly reduce hardship (e.g., contributions of food or clothing) or can allow the mother to address other needs with the income she would have spent on those items. Fathers can also reduce hardship by offering to pay rent, utilities, or telephone bills directly.

Although fathers' provision of material support (formal support, informal cash support, and in-kind support) can reduce hardship in the mother's household, these different types of support are not interchangeable and could have different effects on material hardship (Nepomnyaschy 2007; Garasky et al. 2010). Formal support, which usually arrives in the mail at regular monthly intervals, may be more stable than informal support. It may allow the mother to plan for expenses and to avoid hardships. However, high levels of unemployment, prior incarceration, and other factors may impede efforts by many low-income fathers to make regular child support payments through the formal system (Mincy and Sorensen 1998; Cancian and Meyer 2004b; Geller, Garfinkel, and Western 2008; Swisher and Waller 2008). In addition, the conditions that state policies impose on welfare benefits require recipients to relinquish their rights to formal child support collected on their behalf; in the majority of states, mothers on welfare receive none of the support provided by fathers (Roberts and Vinson 2004). These conditions therefore provide fathers with an incentive to informally contribute. Finally, fathers may have more control over how their payments are spent if they pay informally, leading to reduced hardship (Weiss and Willis 1985); however, informal support could increase hardship if mothers feel they must spend these contributions on items that are visible to the father (e.g., clothes, toys, or furniture), rather than on such necessities as rent or phone bills. It is also possible that fathers' material contributions could increase hardship if their provision of support leads to declines in support from friends, relatives, new partners, or other people in the mother's life. The reduction in other support would have to be greater than the support the father provides, however, and this seems highly unlikely.

Fathers' Visitation and Material Hardship

Fathers' physical contact with their children can also affect material hardship. Regular visits from fathers may constitute a free source of child care and may substitute for paid child care. Regular visits may also allow mothers to spend time in the labor force, increasing their income. Visitation may make the father aware of his child's needs and may induce him to directly help the mother avoid certain hardships. Informal and in-kind support is often provided when fathers come to see the child (Nepomnyaschy 2007; Garasky et al. 2010). Irregular cash or in-kind support of this sort (e.g., when a father pays a utility bill or the rent for a month) is not likely to be captured in the Fragile Families data by the measure of

informal cash support or the measure of in-kind support. Fathers also may loan the mother money. As Yoram Weiss and Robert Willis (1985) theorize, a father's visit allows him to monitor how money is spent in the mother's household. Thus, fathers' visits can reduce hardship if mothers are induced to use money in ways that improve the well-being of the child. Finally, a father's regular visits and involvement with his child can reduce a mother's level of stress and provide a sense of security and stability. This sort of intangible support may help her to manage the financial resources available to her.

Fathers' visits could also increase hardship. If the parents' relationship is conflictual or violent, his visits could increase stress and contribute to an increase in hardship. Finally, hardship may increase if fathers consume resources (food) while in the household or if they discourage contributions from friends, relatives, new partners, or other sources. In sum, the effects of a father's time with his children, whether those of time spent in the mother's house or in his, could either reduce or increase material hardship in the mother's household.

Empirical Evidence of the Effects of Fathers on Material Hardship

In their landmark ethnographic study of the survival strategies of single mothers, Edin and Lein (1997) find that the overwhelming majority of mothers rely on informal support from their networks, particularly from the fathers of their children. Much qualitative research on low-income single mothers and fathers confirms these findings (Roy 1999; Waller and Plotnick 1999, 2001; Pate 2002, 2006; Heflin, London, and Scott 2009). Insofar as nonresident fathers' involvement can be considered an indicator of social support, there is much evidence to suggest that social support and social networks have protective effects that can reduce material hardship (Mayer and Jencks 1989; Lee, Slack, and Lewis 2004; Sullivan et al. 2008).

Little quantitative research focuses on the effect of nonresident fathers' involvement on material hardship in the mothers' household. The authors know of only two studies that examine this question, and this is the specific focus of only one study. In a study that controls for mothers' receipt of informal and formal child support, Bong Joo Lee and colleagues (2004) look at the effects of welfare receipt and work activities on four measures of material hardship among Temporary Assistance for Needy Families (TANF) recipients. They find that neither formal nor informal support is statistically significantly associated with rent, utility, or food hardship; they do find, however, that provision of formal support is statistically significantly associated with declines in the level of perceived hardship (a summary scale based on responses to four items that ask about feelings regarding one's own financial situation). Steven Garasky and Susan Stewart (2007) examine the effects of non-resident fathers' involvement (both financial and physical) on three measures of food insecurity in their children's households. They find that frequent visits (more than once per week) are consistently protective against food insecurity but that provision of child support is only statistically significantly protective against one measure of insecurity. They hypothesize that fathers make in-kind contributions while they are visiting and that such contributions are the mechanism through which fathers' visits affect hardship. However, they do not directly measure in-kind support and are not able to distinguish formal from informal cash support. Further, they measure hardship and fathers' involvement in the same time period.

The analyses in the current study build on this work in a number of ways: by disaggregating financial support from fathers into formal cash support, informal cash support, and in-kind contributions; incorporating temporal ordering by using panel data; and employing eight indicators of material hardship. The analyses also consider mothers' individual attributes that

may affect their ability to avoid hardships. These include physical health, mental health, impulsivity, cognitive ability, and access to social support.

Data and Methods

This article uses data from the Fragile Families and Child Wellbeing Study, a panel study of approximately 4,000 children born to unmarried parents between 1998 and 2000 in 20 large U.S. cities in 15 states. It takes advantage of four waves of panel data, starting with a baseline interview conducted when the children were born and following them up to age 5. Mothers and available fathers were interviewed at the hospital within a few days of the child's birth; fathers who were not at the hospital were interviewed elsewhere. Follow-up interviews with both parents were conducted by telephone when the child was approximately 1, 3, and 5 years old. Data in the Fragile Families study are representative of births to unmarried parents in the late 1990s in all U.S. cities with populations of 200,000 or more (see Reichman et al. [2001] for a detailed description of the study design). Of the unmarried mothers interviewed at baseline, 89 percent were reinterviewed at the 1-year follow-up, 86 percent were reinterviewed at the 3-year survey, and 84 percent were reinterviewed at the 5-year follow-up. At each wave, mothers were asked numerous questions pertaining to fathers' characteristics. Their responses provide detailed information about fathers, even if the fathers were not interviewed.

The current study relies on mothers' reports about fathers' sociodemographic characteristics and involvement with their nonresident children. Although it would be ideal to have fathers' reports of their involvement with children, fathers were not asked about their child support payments to mothers at the 3- and 5-year interviews. In addition, though the Fragile Families survey was able to identify and interview a larger proportion of unmarried fathers than any other national survey, many fathers are missing from the data.² Estimates suggest that fathers missing from the data are more likely to be nonresident (the group on whom this study focuses) and are more disadvantaged on socioeconomic characteristics than those who were interviewed (Teitler, Reichman, and Sprachman 2003). Therefore, relying on fathers' reports could introduce nonresponse bias and could substantially reduce sample sizes across waves.

The sample in the current study consists of mothers who were not cohabiting with the focal child's father at each follow-up interview (1-, 3-, or 5-year follow-up) and who were reinterviewed at least at the 1-year survey. The majority of mothers (69 percent) participated in more than one follow-up interview. Stacking the three waves of follow-up data creates an unbalanced panel of 4,469 repeated observations on 2,180 unique mothers. The sample sizes are 1,373 at the 1-year interview, 1,478 at the 3-year interview, and 1,618 at the 5-year interview. The increase in sample sizes from wave to wave reflects the trend that unmarried parents' cohabiting relationships end over time; however, a small number of mothers are lost to attrition from wave to wave.³ Besides excluding mothers who were cohabiting with the focal father, the sample also excludes those on whom data are missing for variables of interest at each wave. Specifically, data from father involvement variables are missing for 213 mothers at the 1-year survey, for 203 mothers at the 3-year survey, and for 257 mothers

²Seventy-five percent of eligible unmarried fathers (those who were associated with an interviewed mother) were interviewed at the baseline survey. Their follow-up response rates were 65 percent at the 1-year survey, 63 percent at the 3-year follow-up, and 61 percent at the 5-year follow-up.

³Of the 3,711 unmarried mothers in the baseline sample, 3,293 were reinterviewed at the 1-year follow-up. Of these, 50 percent (1,642) were not cohabiting with the father at that follow-up. At the 3-year interview, interviews were conducted with 3,009 mothers who were unmarried at baseline. Of these, 58 percent (1,731) were not cohabiting at that point. At the 5-year interview, follow-up interviews were conducted with 2,921 mothers who were unmarried at baseline. Of these, 66 percent (1,934) were not cohabiting at that time.

at the 5-year survey. Data on hardship variables are missing for 14 cases at the 1-year survey, for 19 cases at the 3-year survey, and for 8 cases at the 5-year survey. Data on covariates are missing for 63 mothers at the 1-year interview, for 57 mothers at the 3-year interview, and for 59 mothers at the 5-year interview. These criteria exclude a total of 207 mothers for whom observations are missing at every wave. Supplementary analyses based on balanced panel data (i.e., data in which each mother appears in all three follow-up waves) examine a subsample of 2,337 observations of 779 unique mothers.

Material Hardship

Material hardship, the outcome of interest, is measured using a series of questions posed in several national surveys, including the Survey of Income and Program Participation, the National Survey of America's Families, and the American Housing Survey (Beverly 2001). At all three follow-up surveys, mothers were asked whether they had to do any of the following things in the 12 months prior to the interview because there was not enough money: (1) receive free food or meals; (2) not pay the full amount of rent or mortgage payment; (3) not pay the full amount of a gas, oil, or electricity bill; (4) have gas or electric service turned off or oil not delivered; (5) have phone service disconnected; (6) be evicted from your home or apartment for not paying the rent or mortgage; (7) stay in a shelter, abandoned building, an automobile, or any other place that was not meant for regular housing, even for one night; (8) not seek medical attention for anyone in your household who needed to see a doctor or go to the hospital, because of the cost.

The primary measure of material hardship is based on the number of hardships that a family experienced in the 12 months prior to each wave. The number of affirmative responses to these measures was used to create a variable with a possible range from zero to eight; zero indicates that the mother reports no hardships, and a score of eight indicates that she responded affirmatively to all eight items. However, prior research points to the fact that each of these measures of hardship may have different antecedents, may lead to different consequences, and may represent very different types of problems (Beverly 2000, 2001; Ouellette et al. 2004; Heflin, Sandberg, and Rafail 2009; Rose, Parish, and Yoo 2009). Each hardship indicator is therefore also analyzed separately.

Father Involvement

Both fathers' financial and physical involvement with their children are considered in this study. The research examines three types of contributions: formal child support, informal child support, and in-kind support. Formal child support is support received through an established child support order. Informal child support is any cash support received from the father outside of a formal order. In-kind support includes clothes, toys, medicine, food, or other noncash support provided by the father.

Formal and informal cash support are measured by continuous variables that reflect the average amount of support provided per month at each wave for the period that the father was eligible to pay support. Fathers' eligibility to pay formal support is defined as the number of months elapsed since the start of the parents' child support order; for informal support, eligibility is defined as the number of months elapsed since the father stopped living with the mother. Eligibility for informal support is assessed at each wave (for fathers who never lived with the mother, it is the total reporting period at each wave). The authors choose to create a monthly amount of support received because the figure reported for the year preceding an interview is conflated with the length of time that a child support order has been in place or how long ago parents stopped cohabiting. For example, two mothers may report \$1,000 of formal support received in the past year, but one obtained a child support order 2 months ago and therefore received \$500 per month; the other mother has had

an order for 10 months and therefore received only \$100 per month. The effect of child support on economic circumstances in these two mothers' households will be very different, and using the yearly report of receipt masks those differences. Fathers who are reported to have paid no support are coded zero.

In-kind support is measured as a dichotomous variable. The variable is positive if the mother indicates that, in the year prior to the interview, the father bought clothes, toys, medicine, food, or other items for the child. The response is considered to be affirmative if the mother reports that he often or sometimes bought those items; it is considered to be negative if she reports that he rarely or never bought them. Fathers' physical contact with children is measured as the number of days on which he saw the child in the 30 days prior to the interview; the measure includes fathers who did not see their child (and, thus, whose days of contact is zero). Among the father involvement variables, the highest estimated correlation is between in-kind support and the number of days of contact (0.59), but the correlations are also high between the number of days of contact and informal support (0.34), as well as between in-kind and informal support (0.34). The lowest estimated correlation is between formal and in-kind support (0.06). That between formal support and days of contact is also estimated to be low (0.004). Formal support is estimated to be negatively and statistically significantly correlated with informal support (-0.07).

Covariates

The analyses consider three broad categories of covariates: sociodemo-graphic characteristics (of mothers, fathers, and children); measures of the father's commitment to the mother and child at the baseline survey; and indicators of the mother's ability to avoid hardship. Also considered is the unemployment rate in the city where the mother is interviewed at each wave. Unemployment is entered as a time-varying covariate. The mean rate of unemployment for the pooled sample is 5 percent.

Family sociodemographic characteristics—The analyses include mothers' reports about characteristics of mothers, fathers, and children. Parents' race or ethnicity is measured as non-Hispanic white, non-Hispanic black, Hispanic, and other. Parents' education is measured in three categories: less than a high school or general equivalency diploma, a high school or general equivalency diploma, and more than a high school or general equivalency diploma. Parents' age is also represented in three categories: under age 21, ages 21–29, and age 30 or over. In addition, the analysis considers whether the mother was born in the United States, whether she received TANF or food stamps in the year prior to the child's birth, whether the father worked in the week prior to the child's birth, the sex of the child, and whether the child was low birth weight. All these variables are measured at the baseline survey and do not vary over time. The analysis also includes several time-varying sociodemographic variables that are measured at each wave of the survey: age of the child (in months), the number of children under age 18 in the mother's household, the number of adults in the household, whether the mother has a new married or cohabiting partner, and the average monthly household income (minus child support received).

Previous research finds that many of these variables are related to both hardship and fathers' involvement with their children. The authors expect that children of more advantaged mothers will have more involved fathers (because these fathers are also more advantaged) and those mothers will therefore be more likely to avoid hardship.

Father's commitment to mother and child at baseline—This set of variables includes four items drawn from mothers' reports: the parents' relationship at the baseline survey (cohabiting, romantically involved but not cohabiting, just friends, or no

relationship); whether the father contributed cash or any other resource during the pregnancy; whether he visited the mother and child in the hospital; and whether he intended to contribute to the child in the future. The father's commitment to the mother and child at baseline is likely associated with his investment in the child, as well as with the likelihood that he will contribute financially and be involved with the child. These fathers may also select mothers who are likely to avoid hardships.

Mother's ability to avoid hardship—Prior research uses many of the previously described variables as proxies for the mother's ability to avoid hardship. The extensive data in the Fragile Families survey enable this study to include explicit measures of such attributes. The baseline survey provides measures of the mother's access to social support and of her health. Access to social support is measured as the sum of the mother's responses (yes = 1, no = 0) to three questions about whether, in the year following the interview, she would be able to count on someone in her family to (1) loan her \$200, (2) provide her with a place to live, and (3) help her with babysitting or child care. Possible scores range from 0 to 3; higher scores indicate more access to social support. Maternal health is measured as a dichotomous variable for whether the mother reports excellent health as opposed to very good, good, fair, or poor.

To measure mothers' cognitive ability, the study uses an eight-item word similarities test that is based on the Revised Wechsler Adult Intelligence Scale (WAIS-R).⁴ A six-item scale measures mothers' impulsivity.⁵ The study also measures mothers' reports on the mental health of their mothers (i.e., the focal child's maternal grandmother).⁶ The variables for mothers' cognitive ability, mothers' impulsivity, and maternal grandmothers' mental health are only measured at the 3-year survey; however, because the variables are assumed to be fixed over time, the analyses treat them as baseline measures. Finally, the study includes a measure of whether the mother reported at the baseline survey that she had a drug or alcohol problem.

Mothers who have more access to social support, who are less impulsive, have higher cognitive scores, and better mental and physical health are expected to have fewer hardships than mothers who do not have these characteristics. Prior research establishes a strong link between access to social support (particularly the ability to borrow money) and a reduction in hardship (Mayer and Jencks 1989; Lee et al. 2004; Sullivan et al. 2008). Mothers' physical health, mental health, and cognitive ability also are linked to hardship (Danziger et al. 2000; Kalil, Seefeldt, and Wang 2002; Heflin et al. 2007; Sullivan et al. 2008); however, these relations could be endogenous. For example, experiences of material hardship may lead to poor mental health, and poor mental health can affect the ability to manage resources. To minimize this specification problem, the analyses use the measure of grandmother's mental health as an exogenous proxy for mothers' own mental health. A mother's current problem with drugs or alcohol may also be endogenous to material hardship; therefore, the analyses include mothers' baseline report of a drug or alcohol problem.

⁴For each item, possible scores are 0, 1, and 2. Scores are summed across each of the eight items for a possible range of 0 to 16; higher scores indicate better performance.

⁵The impulsivity scale is based on the mean of mothers' replies to six items: (1) I often say what comes to my head without thinking; (2) often, I don't think enough before I act; (3) I often say or do things without thinking of consequences; (4) I often get in trouble because I don't think before I act; (5) plans don't work out because I don't go over them carefully; (6) I make up my mind before considering the situation from all angles. Possible responses range from strongly disagree (coded as 1) to strongly agree (coded as 4, after reverse-coding the replies). Scores for this measure range from 1 to 4; higher scores indicate more impulsivity.

⁶The number of mental health problems reported for the grandmother is calculated by summing the number of affirmative responses to four items: (1) did the biological mother ever have periods of depression that lasted 2 weeks or more? (2) did she have periods of a month or more when she was nervous or anxious? (3) did she have problems with drinking or drugs? and (4) did she attempt suicide? Scores range from 1 to 4; higher scores indicate more problems.

Analytic Strategy

First, descriptive statistics are presented for all previously described measures for the full sample and disaggregated by whether the mother reports any hardships. Next, pooled, cross-sectional, ordinary least squares (OLS) models are presented, which estimate the number of hardships in the mother's household on measures of fathers' involvement. Nested models first control only for sociodemographic characteristics and then add indicators of fathers' commitment to the mother and child. The models finally add measures of mothers' ability to avoid hardships (some of these measures were not available in prior research). Standard errors in all models are adjusted to account for multiple observations on each individual over time.

Selection bias—As with all observational studies, a number of potential biases limit the ability to make causal inferences. Families with fathers who pay support and visit their children may differ in unobserved ways from families with fathers who do not, and such differences may bias the estimated relations between fathers' involvement (either financial or physical) with their children and hardship in the mothers' household. In the extreme case, the estimated relation could be fully attributed to these unobserved differences, and there would be no causal relation between the two. For example, fathers may contribute less time and money to a custodial parent who is in poor mental health, has problems with drugs or alcohol, or has low cognitive skills and is not capable of making good choices for her family.

The study addresses this potential bias in three ways. First, as discussed previously, the analyses control for many characteristics that are generally unobserved in many prior studies. Second, the study takes advantage of the panel structure of the Fragile Families data by including a lagged dependent variable in the OLS model: the number of hardships at the prior wave. Third, the analyses estimate models with individual fixed effects, which only examine effects within individuals. Inclusion of a lagged dependent variable reduces the possibility that fixed, unobserved differences drive the results, because these differences should be reflected in the lagged dependent variable. However, effects are still estimated within and between individuals. Unobserved heterogeneity is therefore still possible. Individual fixed-effects models rely only on changes within individuals; using them eliminates the possibility that the results are driven by constant unobserved differences between individuals, though this method does not address unobserved within-person differences that change over time. One drawback of fixed-effects analysis is that results are estimated only for those individuals whose values on the dependent variable change over time and for those who are observed at least twice in the data. This leads to a less representative sample and one that is substantially smaller in size than the full analysis sample. Because the analyses hold constant all characteristics that do not vary over time (within individuals), these regressions only include the variables that change over time.

Supplementary analyses present results based on a balanced panel of observations. This panel includes only those cases in which the mother is observed in the sample at all waves. This analysis addresses the possibility that the results are driven by the mothers with the greatest number of observations, since these mothers contribute the most data. Other supplementary analyses examine each type of material hardship separately. Because each indicator of material hardship is a dichotomous variable, these analyses employ pooled, cross-sectional logistic regression models and fixed-effects logit models.

Reverse causality—Another potential source of bias is reverse causality. Specifically, material hardship in the mother's household may affect fathers' financial or physical involvement. For example, a mother may call on the father for help because she is having

financial problems, and he may provide some financial assistance when he comes to see the child. These events would lead to a positive but spurious association between fathers' involvement and hardship; such an association could offset or dominate the true negative causal effect (if there is one). Reverse causality could also lead to a spurious negative association between involvement and hardship. For example, a mother's experience of hardship (phone disconnected or eviction) may prevent the father from visiting the child. One potential way to disentangle the temporal ordering of effects is to measure fathers' involvement and hardship at the prior wave, to explicitly test whether hardship at that prior wave affects fathers' involvement in the current wave, and to consider whether involvement at the prior wave affects hardship at the current wave.

The analysis uses Mplus software (version 4) to estimate these cross-lagged models within a structural equation modeling framework. In these models, the mean of father involvement at the 1- and 3-year surveys is used to predict hardship at the 5-year survey. So too, mean hardships from the 1- and 3-year surveys are used to predict father involvement at the 5-year survey. The models control for baseline characteristics as well as the lagged measure of the dependent variable (father involvement and hardship at the 3-year survey). The structural equation modeling framework, which estimates these reciprocal effects simultaneously, allows for the estimation of the effects of earlier father involvement on future material hardship independently of the effects of earlier father involvement on future father involvement and vice versa.

Results

Sample Description

Outcomes—Table 1 presents descriptive characteristics for the full sample of mothers who had nonmarital births and reported at each wave that they do not reside with the father of the focal child. Nearly half (49 percent) of the sampled mothers report that they experienced at least one of the eight hardships measured in these analyses. On average, sample mothers report experiencing 0.99 hardships in the year prior to the survey. Utility and phone bills account for the most commonly reported hardships; 27 percent of recipients report that they did not pay the full amount of a gas, oil, or electricity bill, and 23 percent report that their phone service was turned off. Other hardships are reported less frequently. Fifteen percent of participants report that they did not make the full rent or mortgage payment, 12 percent report that they received free food or meals, and 9 percent report that their gas or electric service was shut off or oil was not delivered. Six percent report that someone in their household needed to see a doctor or go to the hospital but did not go because of a lack of money. The least commonly reported hardships were eviction for failure to make rent or mortgage payments (3 percent) and staying in a place not meant for housing (3 percent).

On average, mothers reporting any hardship (2,171 participants; second column of table 1) report 2.04 total hardships and are much more likely than the full sample to experience each of the individual hardships. More than half (56 percent) of those who reported any hardship indicate that they did not pay all of a utility bill (gas, oil, or electricity) that was due, and 47 percent indicate that their phone service was shut off. Nearly one-third (30 percent) of these mothers report that they did not make a full rent or mortgage payment, and one-quarter report that they received free food or meals.

Father involvement—Nearly half of fathers (48 percent) reportedly made an in-kind contribution during the period they lived apart from their children. Slightly fewer (42 percent) reportedly made an informal cash contribution. Informal cash contributions average \$53 per month across all fathers. Far fewer fathers (only 21 percent) reportedly made formal payments. These payments average \$39 per month across all fathers. Not reported in the

table is the shift over time from in-kind and informal support to formal child support. As the time from the child's birth (and the length of time since parents ceased cohabitation) increases, reported informal support (which is initially high) declines and formal support (which is initially low) increases. These amounts become approximately equal at 36 months after the child's birth. After the 36-month point, formal support is estimated to become greater than informal support. (For an analysis of the effects of child support enforcement on informal and formal support over time, see Nepomnyaschy and Garfinkel [2010].) Sampled mothers report that well over half (57 percent) of fathers had contact with their child in the 30 days prior to the interview. Across the sample, fathers are estimated to have contact with their child on an average of 7.5 of the 30 days prior to the interview.

Children living in families that reportedly experienced at least one hardship are found to be less likely to receive in-kind support from fathers than are children in families that report no hardship (46 percent vs. 50 percent). So too, children in families that report any hardship are found to receive less informal and formal cash support. They are reported to have less contact with their father (6.9 of the 30 days prior to interview) than children living in families with no hardships (8.1 days). These differences are statistically significant.

Family sociodemographic characteristics—The mothers in this sample report that they are mostly nonwhite (64 percent identify themselves as non-Hispanic black and 21 percent identify themselves as Hispanic), have low education (39 percent did not complete high school), and were relatively young at the time of the focal child's birth (38 percent were less than 21 years old). Most report that they were born in the United States (93 percent). Fathers' characteristics are reported to be similar to those of mothers, but fathers are older (80 percent were age 21 or older at the baseline interview; 62 percent of mothers were age 21 or older at that time). Only 59 percent of these fathers were reported to be employed in the week prior to the child's birth. Nearly half of the mothers (48 percent) report that they received TANF or food stamps at the time of the child's birth, and 12 percent report that the focal child was low birth weight (i.e., weighed less than 2,500 grams). On average and across the pooled years of data, mothers report that there are 2.4 minor children and two adults living in their households. Twenty-two percent of mothers report that they have a new married or cohabiting partner. On average, sampled mothers report approximately \$1,700 of monthly household income across the pooled waves (this excludes income from child support).

Sampled black and white mothers are more highly represented among those reporting experience of a hardship (65 percent of black mothers, 14 percent of white mothers) than among those reporting no hardship (63 percent black, 11 percent white). The percentage of Hispanic mothers in the subsample reporting a hardship (19 percent) is smaller than that of counterparts who reported no hardship (24 percent). In general, mothers who report material hardship are found to have lower levels of education; they are more likely to not have completed high school and less likely to have a diploma, though they are slightly more likely to have some post high school education than mothers reporting no hardship. Mothers with any hardship are also more likely to have been born in the United States than those without material hardship. Over half (52 percent) of mothers with any hardship report receiving TANF or food stamps at the birth of the child, but these benefits were received by only 44 percent of mothers who report no hardship. Fathers' race, ethnicity, and age are estimated to be statistically significantly associated with the mother's report of hardship, though neither paternal educational attainment nor work status at the child's birth is associated with hardship to a statistically significant degree. Mothers experiencing hardship report a greater number of children and a fewer number of adults in the household at each wave than mothers who report no hardship. As expected, mothers experiencing any hardship

report \$500 less in monthly household income (nearly 25 percent less) than those who report no hardship. These differences are statistically significant.

Father's commitment to mother and child at baseline—At the baseline interview, one-third of mothers reported that they were cohabiting with the father, 42 percent reported that they were romantically involved but not cohabiting, 12 percent reported that they were friends, and only 14 percent reported that they had no relationship with the father. An overwhelming majority of fathers reportedly contributed cash or other items during the pregnancy, visited in the hospital, and intended to contribute to the child in the future.

Mothers who reported any hardship are more likely to have cohabited with the father at the time of the child's birth but are less likely to have been romantically involved with him than mothers who reported no hardships. None of the other variables measuring fathers' commitment is found to be statistically significantly associated with report of any material hardship.

Mother's ability to avoid hardship—Mothers report a high level of access to social support (the average score is 2.72 out of a possible 3 on this index); although only 30 percent of mothers reported that they were in excellent health at the baseline survey. Participants have an average score of 2.09 on the impulsivity score (out of 4; higher is more impulsive) and a score of 6.41 (out of 16; higher is better) on the test of mothers' cognitive skills (the WAIS-R word similarities index). On average, mothers report that their mothers have 0.63 mental health problems (out of 4), and 6 percent reported at the time of the child's birth that they have their own problems with alcohol or drugs.

The levels of these hardship avoidance variables all differ to a statistically significant degree by whether mothers reported any hardship at the follow-up interviews. Mothers with at least one hardship report lower levels of access to social support, lower likelihood of being in excellent health, and higher levels of impulsivity than mothers who report no hardship. Mothers who experience any hardship report more mental health problems for their own mothers than those with no hardship. The likelihood of having a drug or alcohol problem is estimated to be greater among mothers reporting a hardship than among mothers with no reported hardship. Surprisingly, results from the WAIS-R test suggest that mothers with at least one hardship have higher scores on the cognitive skills test than mothers with no hardships.

Father Involvement and Material Hardship

Table 2 presents results from pooled cross-sectional OLS models that regress the number of material hardships (range 0–8) on fathers' involvement. The analyses presented here examine the full sample of mothers and control for different sets of covariates. Model 1 controls for sociodemographic characteristics of the respondent's family, model 2 adds controls for measures of fathers' commitment to the mother and child at the baseline survey, and model 3 adds controls for explicit measures of the mother's ability to avoid hardships.

The first point to consider in this table is that father involvement variables remain relatively stable across the models, as various controls are added. The measures of fathers' formal and informal cash support, as well as of the number of days of contact, are respectively, negatively, and statistically significantly associated with the number of hardships in the mother's household. The magnitudes of the coefficients are not reduced as additional controls are added for parent and child characteristics (except for a slight reduction in the size of the formal support coefficient). Results from model 3 suggest that a \$100 increase in either monthly informal or formal cash support is associated with 0.05 fewer reported hardships, resulting in a 5 percent decline in the number of reported hardships (0.99 [total

number of hardships for the full sample] $- 0.05 = 0.94$ [a 5 percent reduction]). Across all models, each extra day of father-child contact per month is associated with 0.01 (or 1 percent) fewer hardships in the mothers' household. These estimates find no statistically significant association between fathers' in-kind support and the number of reported hardships.

Results in model 3 also suggest that the number of reported material hardships is not statistically significantly associated with the measures of maternal race, ethnicity, or age, once the other characteristics are included. In that model, mothers with more than a high school education are estimated to report 0.17 (or 17 percent) more hardships than those without a degree. The estimates for fathers' demographic characteristics reveal similar patterns, but there are a few differences. Fathers who are age 30 or older report 0.14 (or 14 percent) more hardships than fathers who are under age 21, and Hispanic fathers report 0.21 or (21 percent) fewer hardships than non-Hispanic white fathers, but neither of these coefficients is statistically significant at conventional levels in the fully controlled model (model 3). Some previous research finds that age (mostly mothers' age) is positively associated with several measures of hardship (Short 2005; Heflin et al. 2007; Parish, Rose, and Andrews 2009). So too, in some studies that control for income, non-Hispanic white mothers are found to be more likely to experience some types of hardship than are mothers of other racial and ethnic groups (Gundersen and Oliveira 2001; Bauman 2002; Heflin et al. 2007; Sullivan et al. 2008). Several prior studies that control for income and other sociodemographic characteristics also find either that education is not associated with hardship or that the associations run in unexpected directions (e.g., higher education associated with more hardship; Lee et al. 2004; Garasky and Stewart 2007; Leete and Bania 2009). Mothers who report receiving TANF or food stamps in the year prior to the child's birth are estimated to experience 0.17 (or 17 percent) more hardships than do those who report receiving no such benefits. As expected, the estimates in all three models indicate that mothers' reported monthly income (minus child support) is negatively and statistically significantly associated with the number of reported hardships; every \$100 of income per month is associated with 0.01 (or 1 percent) fewer hardships. Finally, the unemployment rate in respondents' cities is estimated to be positively and statistically significantly associated with the number of reported hardships; estimates in model 3 suggest that each percentage point increase in unemployment is associated with 0.04 or (4 percent) more hardships.

Mothers who reported that they were romantically involved or just friends with the father at baseline are found to have fewer hardships than mothers who reported that they were cohabiting at that time. Perhaps mothers in these relationships have a more difficult time adjusting to the father's absence than mothers who have been living without the father since the birth of the child. Finally, the results suggest that most of the variables measuring mothers' ability to avoid hardships are statistically significantly associated with the number of reported hardships. Mothers' access to social support at baseline is associated with fewer reported hardships; mothers' impulsivity, grandmothers' mental health problems, and mothers' own drug and alcohol problems are associated with more hardships. Mothers who reported a drug or alcohol problem at baseline are estimated to experience 0.22 (or 22 percent) more hardships than mothers who do not report such a problem. As results in the bivariate models (table 1) suggest, mothers with higher scores on the WAIS-R measure of cognitive skills are estimated to report more hardships. One potential explanation for this puzzling result is that these mothers may be better at reporting hardship than mothers with lower scores on this measure.

Another important result from table 2 is the finding that the strength of some sociodemographic variables declines if other controls are added to the models, particularly

controls related to mothers' ability to avoid hardships. The magnitudes of the coefficients for parents' race, ethnicity, age, and education are reduced by nearly half if these other variables are added. This finding confirms the importance of including these types of variables in studies of material hardship. It also suggests that the effect of demographic characteristics may be overestimated in previous studies' predictions of material hardship. However, the size of the monthly household income coefficient remains quite stable across models; this suggests that income (and fathers' involvement, as mentioned previously) is highly protective of material hardship, even after models are expanded to include controls for mothers' ability to avoid hardship.

Unobserved Heterogeneity

To address potential selection bias, table 3 presents a number of alternative specifications of the effects of father involvement on material hardship. Each column in the table represents a separate regression in which all previously discussed covariates are controlled. To facilitate comparison, the first column (OLS, unbalanced panel) repeats results from model 3 in table 2. The second column presents results from a model that includes the number of hardships from the previous wave (lagged dependent variable). The use of a lagged dependent variable should reduce unobserved heterogeneity in the results, yet the effects are still estimated within and across individuals. As expected, the number of hardships at the prior wave is found to be strongly associated with hardship in the current wave; each additional hardship at the 3-year survey is estimated to be associated with 0.40 (or 40 percent) more hardships reported at the 5-year survey. In the lagged dependent variable model, the coefficient for in-kind support is estimated to be slightly larger than that obtained from the original OLS estimates. The use of the lagged variable reduces the size of the coefficients for formal and informal support, such that neither is statistically significant. The two models produce identical coefficients for the association between the number of days of contact and the number of reported hardships. This association remains highly statistically significant in both models. These results suggest that families with different levels of father involvement may differ in unobserved ways. These differences could drive the observed associations between father involvement and reports of hardship. However, fathers' contact with children is estimated to have a protective effect on hardship, and the effect does not appear to be driven by unobserved differences.

The third column in table 3 presents results from models that include individual fixed effects. These effects are estimated only within individuals, and the underlying analyses hold constant all of the within-individual characteristics that do not vary over time. These models should eliminate all possibility that static unobserved differences drive the results. In the fixed-effects model, the estimated coefficient for informal support is substantially smaller than that in the lagged dependent variable model, and the fixed-effects estimate for formal child support remains the same as that for the lagged model. The coefficient for days of contact remains unchanged and highly statistically significant across all three models. Results from the fixed-effects model again provide evidence that the negative association between the number of days of fathers' contact and the number of reported hardships is not driven by static unobserved differences between families.

In the fixed-effects model, the association between in-kind support and the number of reported hardships becomes strongly positive and statistically significant. Fathers' provision of in-kind support is associated with 0.16 (or 16 percent) more reported hardships. This result may suggest that reverse causality is a factor in this relation, such that mothers who experience material hardship may ask fathers for help, and fathers may respond by providing noncash contributions. For example, if a mother does not have money for groceries, she may call the father and he may purchase groceries for the household. This relation is observed

when effects are estimated only within individuals, but it is suppressed in previous models, because those analyses average effects between and within individuals.

The last two columns of table 3 present results from a balanced panel of mothers. This panel includes only those mothers for whom information is available from all three follow-up waves. These balanced panel analyses are conducted to reduce the possibility that the results are driven by the mothers with the most observations, another form of selection bias. The sample for these analyses is smaller than that used in the study's other models, because this sample excludes mothers for whom observations are missing at any of the waves. The OLS column in the balanced panel presents results from pooled cross-sectional OLS models (comparable to results in the OLS column of the unbalanced panel). The fixed-effects column of the balanced panel presents results from models with individual fixed effects (comparable to results in the fixed-effects column of the unbalanced panel). In general, estimates for the balanced panel models are very similar to those for the original, unbalanced panel models. In the pooled cross-sectional OLS model from the balanced panel, the magnitudes of the coefficients for informal and formal cash support are somewhat larger (more negative) than those in all previous models from the unbalanced panel; the magnitude of the estimated coefficient for the number of days of paternal contact is unchanged, but it is not statistically significant. The fixed-effects results in the balanced panel are estimated to be nearly identical to those of the unbalanced panel's fixed-effects model, though the coefficients from the balanced panel are not statistically significant because the samples are smaller in these models.

Individual Indicators of Hardship

Table 4 presents estimates of the association of father involvement with the eight individual, dichotomous (yes or no) indicators of material hardship. The top panel presents results from pooled cross-sectional logistic regression models, and the bottom panel presents results from fixed-effects logistic regression models. The figures in the table are odds ratios, and *z*-statistics are presented in parentheses. It is not surprising that the associations of father involvement vary across the different measures of hardship. In the pooled cross-sectional models, informal cash support, formal cash support, and the number of days of father-child contact are respectively and negatively associated with the hardship indicators (seven of eight indicators), though not all of the coefficients are statistically significant. These results suggest that each of the three types of support protects mothers against the measured hardships. Neither informal cash support nor the number of days of father's contact is found to be related to whether a member of the mother's household did not see a doctor or go to a hospital because there was not enough money to do so. So too, the pooled cross-sectional estimates identify no relation between formal support and whether the family did not pay the full amount due for a utility (gas, oil, or electricity) bill. The results are less consistent for in-kind support. The results in the top panel suggest that in-kind support is positively associated with some hardships and negatively associated with others, although only two coefficients are found to be statistically significant, and they are only marginally so.

In the fixed-effects models (bottom panel of the table), sample sizes are much smaller than those in the pooled models because, as mentioned previously, fixed effects can only be estimated on individuals who experience a change on the dependent variable from wave to wave. Because these dependent variables are dichotomous, the chance that they will not change from wave to wave is much greater than would be the case in models that use a continuous measure of the number of hardships. Therefore, few of the coefficients reach statistical significance at conventional levels; however, the magnitudes of many of the coefficients are similar to or larger than those in the pooled cross-sectional models.

Following the pattern of the fixed-effects results for the continuous measure of the number of hardships (table 3), these fixed-effects models estimate that in-kind support is positively associated with each measure of hardship, though only three of the coefficients are statistically significant. The results suggest that receipt of in-kind support increases the odds that a mother will not make the full rent or mortgage payment owed (by 62 percent) and the odds that a mother's utilities will be shut off (by 89 percent). Mothers who receive in-kind support are estimated to have 3.5 times greater odds of staying in a place not meant for housing. The fixed-effects results for informal and formal cash support are much less consistent. Receipt of informal cash support is estimated to reduce a mother's odds of staying in a place not meant for housing by a statistically significant 42 percent. Receipt of formal support is estimated to reduce a mother's odds of receiving free food by 22 percent and her odds of being evicted by 57 percent.

The fixed-effects coefficient for the number of days of father-child contact in the month prior to survey is negatively and statistically significantly associated with four indicators of hardship. Each day of father-child contact is estimated to diminish the odds that a mother will report experiencing that hardship. Specifically, each day is estimated to reduce the odds of having phone service turned off by 2 percent, the odds of having utilities turned off by 2 percent, the odds of being evicted by 5 percent, and the odds of staying in a place not meant for living by 6 percent. The results thus far suggest that fathers' contact with children is consistently and negatively associated with hardship in the mothers' household. These associations persist across different models and specifications. The estimates for informal and formal cash support are less robust. In-kind support, by contrast, is found to be positively associated with hardship, but the association may be attributable to reverse causation.

Reverse Causality

In order to establish a temporal ordering of events and to explicitly examine the possibility of reverse causality, cross-lagged models are estimated. The results of these models are presented in table 5. Each stub-column item represents a cross-lagged model, and each model controls for previously discussed covariates that do not vary over time. The table presents the results of estimates with five dependent variables; the first two columns present results of estimates for the number of hardships reported during the year prior to the 5-year follow-up survey, and the last two columns present results for the four measures of father involvement (also measured at the 5-year survey). The independent variables of interest (lagged variables) represent averages across the 1- and 3-year surveys. (Alternative analyses measured the lagged variables only at the 3-year survey and at both the 1- and 3-year surveys; the results were similar to ones that are presented in table 5 and that use an average across the 1- and 3-year surveys.) Each model includes a measure of the lagged dependent variable, which is always positive and highly statistically significant. Also presented are standardized coefficients that allow for comparison of effect sizes across models and across different measures. The first two columns examine the effect of the listed father-involvement measures, assessed at the prior waves, on hardship at the 5-year survey (the original direction of interest). The third and fourth columns present the effect of hardship at the prior waves on fathers' involvement at the 5-year survey (the reverse causal direction).

The estimates identify no statistically significant association between the measure of lagged days of contact and hardship in the year prior to the 5-year interview. So too, no such association is observed between the measure of lagged hardship and days of contact in the month prior to the 5-year interview, but the standardized coefficient is 1.5 times larger for the reverse causation path. Furthermore, in the panels for informal and formal cash support, lagged hardship is estimated to be negatively and statistically significantly associated with informal and formal child support payments made in the year prior to the 5-year interview.

Neither lagged formal child support nor lagged informal support is found to be associated with hardship in the year prior to the 5-year interview. The standardized coefficients from these models, which estimate the reverse causal direction, are more than twice the size of those in the other (hypothesized) direction (-0.05 vs. -0.02). In contrast, results from the in-kind support panel suggest that such contributions reduce future hardship, although hardship is not found to predict future in-kind contributions. Taken together, these results suggest that causation is more likely to go from hardship to father involvement than from father involvement to hardship.

Summary and Conclusion

This article examines associations between different measures of fathers' financial and physical involvement with their nonresident children and material hardship in the mother's household. It takes advantage of longitudinal data that include multiple observations on each family over several waves of data. Estimates from cross-sectional pooled models suggest that fathers' formal cash support, informal cash support, and contact with their children respectively reduce the number of hardships reported by sampled mothers. These results persist in models that control for other types of involvement and for an extensive set of covariates. The estimated effects of father-child contact are more consistently robust in models with lagged dependent variables and individual fixed effects than are results involving cash supports. This finding suggests that fathers who are involved with their children may differ in unobserved ways from fathers who are not involved, and such differences may drive the results for formal and informal cash child support. The robustness of results for the association of father-child contact and hardship within both the models with lagged dependent variables and those with individual fixed effects suggests that this association is not driven by unobserved heterogeneity. These results are consistent with those of Garasky and Stewart (2007), who find that the effect of father visits is stronger than that of child support payments in reducing food insufficiency.

An examination of the hypothesis that the associations might be due to reverse causation identifies stronger evidence that hardship decreases future father involvement than that father involvement decreases future hardship. As the preceding discussion notes, there are good reasons to believe that hardship diminishes levels of father involvement. If mothers have their phone service turned off, are evicted, or have to move to a shelter, fathers may find it difficult to visit and to contribute to their children (particularly through informal cash or in-kind contributions). The fixed-effects models looking at individual measures of hardship potentially point to this explanation. In those models, the strongest negative coefficients for days of father-child contact, informal cash support, and formal cash support are found for their association with eviction and staying in a place not meant for living. A related and more general explanation is that fathers' visits may decline when the mother experiences hardship. Arranging visits requires time and coordination on the mother's part. Her ability to make such arrangements may be impeded by experience of hardship.

Finally, this study finds that in-kind support is positively and statistically significantly associated with contemporaneous hardship in fixed-effects models and negatively associated with future hardship. Together, the in-kind results suggest a process that begins with reverse causation: the mother experiences hardship, and the father comes to her aid. This process ends with the originally hypothesized causal path: father involvement reduces future hardship for the mother and child.

In short, the results examining the relations between nonresident father involvement and material hardship in Fragile Families are far more complex than previously imagined. For a given family, causation very likely goes both ways, albeit at different times. Future research

should focus on heterogeneity within the population. The recent work of Jacob Cheadle, Paul Amato, and Valarie King (2010) uncovers a number of different patterns of involvement among nonresident fathers. It is an important example of the type of research that is necessary.

This article has a number of limitations that point the way for further research in this area. First, as mentioned previously, getting the temporal ordering of events is crucial when trying to understand how fathers' money and time spent with children affect economic well-being in the children's homes. Figuring out the appropriate lags and identifying data that measure these time periods is crucial. Related to the issue of temporal ordering is the possibility that time-varying unobserved characteristics may drive the results. If unemployment increases, fathers' involvement and mothers' hardship may be affected. Although both the fixed effects and cross-lagged models include the unemployment rate at the time of the 5-year survey, it is not clear if that is the appropriate time period or whether unemployment should be lagged. If unemployment should be lagged, it also is not clear how long the lag should be. Future research should also consider these questions.

Second, this study cannot rule out the possibility of measurement error in the indicator of in-kind support. Mothers are asked about fathers' provision of food, clothes, toys, medicine, and other items. It is hard to know how the mother would classify a situation in which the father takes the child to the doctor or pays the mother's electric bill. It is very likely that when a mother anticipates financial hardship, she calls the father and he provides assistance. However, some of these types of contributions are not picked up in the measure of in-kind support. Future surveys should focus attention on improving assessment of fathers' noncash contributions to children.

Third, it is possible that the amount of support provided by fathers is measured with greater error than the amount of fathers' contact with children. If this is the case, the estimates of the effects of support provided are less precise than the estimates of the effects of contact.

This study also has a number of strengths. First, the study finds that other characteristics of mothers, such as mental health (proxied with grandmother's mental health), impulsivity, and access to social support, are very strongly related to hardship. Those findings confirm results from previous research and reaffirm the need to include such types of variables in studies of family economic circumstances. Second, although the findings may provide more questions than answers, they clearly indicate that it is essential to look at these relations through a longitudinal lens. Results from prior research may be biased because they fail to consider the effects of fathers' involvement over time.

Material hardship—such as food insufficiency, homelessness, utility shutoffs, and unmet medical needs—is known to be detrimental to children's health and well-being, over and above the effects of household income or poverty. In addition, these conditions are present in many households with incomes well above poverty thresholds. Children living in single-parent families are particularly at risk for hardship, especially those children born to unmarried parents. It is important to understand how nonresident fathers, through their payment of child support and time spent with children, can improve their children's lives. It is also important to understand how material hardship in the mother and child's household may disrupt father involvement. The results from this research point to the strong possibility that all types of father involvement are important for children, but the findings also underscore the difficulty of making causal statements in this type of research. Finally, these results highlight the gaps in knowledge and the need for further research in this area.

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Table 1

Descriptive Statistics by Presence of Material Hardship in the Mother's Household

Variable	Full Sample	Any Hardship	No Hardship
<i>N</i>	4,469	2,171	2,298
Material hardship: ^a			
Total no. of hardships (0–8)	.99 (1.34)	2.04 (1.26)	0
Any hardship	.49	1	0
Individual measures of hardship:			
Received free food or meals	.12	.25	
Did not see doctor	.06	.13	
Phone service shut off	.23	.47	
Did not pay full gas, oil, or electricity bill	.27	.56	
Did not pay full rent or mortgage payment	.15	.30	
Gas or electricity shut off or oil not delivered	.09	.19	
Evicted for not paying rent or mortgage	.03	.07	
Stayed in a place not meant for living	.03	.07	
Father involvement variables: ^a			
Any in-kind support *	.48	.46	.50
Informal cash support per month (\$) *	53 (134)	49 (133)	57 (135)
Any informal cash support *	.42	.41	.44
Formal cash support per month (\$) **	39 (113)	35 (105)	42 (120)
Any formal cash support	.21	.21	.22
No. of days of contact in 30 days before survey ***	7.49 (10.3)	6.89 (10.0)	8.05 (10.6)
Any contact in 30 days before survey ***	.57	.56	.58
Family sociodemographic characteristics:			
Mother's race or ethnicity: ***			
Non-Hispanic white	.13	.14	.11
Non-Hispanic black	.64	.65	.63
Hispanic	.21	.19	.24
Other race or ethnicity	.02	.02	.02
Mother's education: **			
<HS	.39	.41	.39
HS or GED	.35	.33	.36
>HS	.26	.26	.25
Mother's age (years):			
<21	.38	.36	.40
21–29	.49	.50	.48
≥30	.13	.14	.12
Mother is U.S. born **	.93	.94	.92
Mother received TANF or FS at baseline ***	.48	.52	.44

Variable	Full Sample	Any Hardship	No Hardship
Father's race or ethnicity: ^{**}			
Non-Hispanic white	.09	.10	.09
Non-Hispanic black	.66	.69	.64
Hispanic	.22	.19	.25
Other race or ethnicity	.02	.02	.02
Father's education:			
<HS	.37	.36	.37
HS or GED	.43	.43	.43
>hs	.21	.21	.20
Father's age (years): [*]			
<21	.20	.18	.21
21–29	.57	.55	.59
≥30	.23	.27	.20
Father worked in week prior to child's birth	.59	.57	.61
Male child [*]	.53	.55	.51
Child was low birth weight	.12	.12	.12
Age of child in months ^a	39.7 (19.5)	40.0 (19.2)	39.3 (19.7)
No. of children <age 18 in HH ^{a, *}	2.4 (1.4)	2.5 (1.4)	2.3 (1.4)
No. of adults in HH ^{a, ***}	1.9 (1.0)	1.7 (.9)	2.0 (1.0)
Mother has a new partner (married or cohabiting) ^a	.22	.21	.23
Monthly household income minus child support ^{a, ***}	1,689 (1,788)	1,408 (1,443)	1,955 (2,027)
City-level unemployment rate ^a	5.05 (1.4)	5.12 (1.3)	4.98 (1.4)
Parents' relationship at baseline: ^{***}			
Cohabiting	.32	.34	.29
Romantic, not cohabiting	.42	.40	.45
Friends	.12	.12	.12
In no relationship	.14	.14	.14
Father contributed cash during pregnancy	.74	.73	.74
Father contributed other items during pregnancy	.70	.71	.69
Father visited in the hospital	.66	.67	.65
Father intended to contribute (baseline)	.86	.88	.86
Mother's ability to avoid hardship:			
Access to social support (0–3; higher = better) ^{***}	2.72 (.71)	2.64 (.79)	2.80 (.60)
Excellent health at baseline ^{***}	.30	.27	.33
Impulsivity index (1–4; higher = more impulsive) ^{b, **}	2.09 (.61)	2.13 (.62)	2.05 (.60)
Cognitive skills (0–14; higher = better) ^{b, **}	6.41 (2.44)	6.50 (2.47)	6.33 (2.41)
Alcohol or drug problem at baseline ^{***}	.06	.08	.04
Grandmother's mental health (0–4 higher = worse) ^{b, ***}	.63 (.96)	.79 (1.65)	.48 (.82)

Note.—HS = high school education; GED = general equivalency diploma; TANF = Temporary Assistance for Needy Families program benefits; FS = food stamps; HH = household. Figures in tables are proportions or means, and standard deviations are presented in parentheses. Asterisks indicate statistically significant differences between those with and without any hardships.

^aVariables are time-varying.

^bVariables available only at 3-year survey.

*
 $p < .05$.

**
 $p < .01$.

 $p < .001$.

Table 2
Pooled Cross-Sectional Ordinary Least Squares Regression Models of Number of Hardships on Father Involvement

Variable	Model 1		Model 2		Model 3	
	Coeff.	t-Statistic	Coeff.	t-Statistic	Coeff.	t-Statistic
Father involvement measures: ^a						
In-kind support	.02	.43	.02	.26	.03	.55
Informal cash support (\$100)	-.05*	2.53	-.05*	2.78	-.05**	2.90
Formal cash support (\$100)	-.06**	2.82	-.06**	2.89	-.05*	2.24
Days of contact	-.01*	2.76	-.01**	3.25	-.01**	3.29
Sociodemographic characteristics:						
Mother:						
Non-Hispanic black	-.22	1.60	-.18	1.30	-.08	.66
Hispanic	-.18	1.40	-.17	1.31	-.09	.69
Other race or ethnicity	-.07	.25	-.08	.28	-.07	.26
Has HS or GED	-.11 ⁺	1.91	-.11 ⁺	1.92	-.05	.91
>HS	.11	1.47	.12	1.56	.17*	2.34
Age 21–29	.01	.16	-.01	.11	-.02	.32
Age 30 ⁺	.10	.93	.11	1.02	.08	.81
U.S. born	.09	.83	.08	.78	.02	.15
Received TANF or FS at baseline	.21***	4.28	.21***	4.16	.17**	3.44
Father:						
Non-Hispanic black	-.11	.70	-.09	.56	-.06	.41
Hispanic	-.27 ⁺	1.77	-.26 ⁺	1.73	-.21	1.55
Other race or ethnicity	-.17	.85	-.14	.68	-.15	.77
Has HS or GED	-.03	.42	-.02	.29	-.02	.28
>HS	.03	.35	.03	.41	.02	.23
Age 21–29	.05	.79	.05	.76	.05	.75
Age 30 ⁺	.23*	2.47	.22*	2.45	.14	1.58
Worked week prior to birth	-.06	1.01	-.07	1.18	-.06	1.03

Variable	Model 1		Model 2		Model 3	
	Coeff.	t-Statistic	Coeff.	t-Statistic	Coeff.	t-Statistic
Male child	.04	.87	.06	1.14	.04	.90
Child was low birth weight	-.09	1.27	-.09	1.31	-.09	1.31
Age of child in months ^a	.00*	2.45	.00 ⁺	1.91	.00*	2.17
No. of children <18 in HH ^a	.03 ⁺	1.89	.03 ⁺	1.80	.03	1.58
No. of adults in HH ^a	-.05*	2.16	-.05*	2.03	-.04	1.64
Mother has a new partner ^a	-.03	.50	-.04	.64	-.07	1.23
Monthly HH income less child support (\$100) ^a	-.01***	7.77	-.01***	7.88	-.01***	7.55
City-level unemployment rate ^a	.04 ⁺	1.94	.03 ⁺	1.93	.04*	2.21
Father's commitment to mother and child at baseline:						
Parents romantic			-.21**	3.42	-.16*	2.58
Parents friends			-.21*	2.36	-.18*	2.09
Parents in no relationship			-.14	1.30	-.15	1.39
Father contributed cash during pregnancy			-.15*	1.98	-.11	1.40
Father contributed other items during pregnancy			.08	1.12	.09	1.21
Father visited in the hospital			.09	1.47	.05	.88
Father intended to contribute at birth			.11	1.26	.13	1.55
Mother's ability to avoid hardship:						
Access to social support at baseline (0– higher = better)					-.17***	4.01
Excellent health at baseline					-.06	1.10
Impulsivity index (1–4; higher = more impulsive)					.11*	2.52
Cognitive skills (0–14; higher = better)					.03*	2.55
Alcohol or drug problem at baseline					.22 ⁺	1.74
Grandmother's mental health problems (0–4; higher = worse)						7.41
R ²	.06		.07		.11	
Observations	4,469			4,469		

Note.—HS = high school education; GED = general equivalency diploma; TANF = Temporary Assistance for Needy Families program benefits; FS = food stamps; HH = household. The figures in table 2 are ordinary least squares coefficients and *t*-statistics.

^a Variables are time-varying.

⁺ $p < .10$.

^{*} $p < .05$.

^{**} $p < .01$.

^{***} $p < .001$.

Table 3
Alternate Specifications of the Effects of Father Involvement on Children's Material Hardship

Variable	No. of Hardships (Range 0–8)					
	Unbalanced Panel			Balanced Panel		
	OLS	LDV	FE	OLS	FE	FE
In-kind contributions	.03 (.55)	.04 (.63)	.16* (2.67)	.03 (.34)		.15* (2.07)
Amount of informal cash support per month (\$100)	-.05*** (2.90)	-.04 (1.56)	-.01 (.28)	-.06 ⁺ (1.80)		.00 (.12)
Amount of formal cash support per month (\$100)	-.05* (2.24)	-.03 (1.47)	-.03 (1.27)	-.07* (2.37)		-.03 (.92)
Days of contact	-.01*** (3.29)	-.01** (3.03)	-.01*** (2.70)	-.01 (1.35)		-.01 (1.50)
No. of hardships in prior wave		42*** (16.43)				
<i>N</i>	4,469	2,983	2,778	2,337		1,752

Note.—OLS p ordinary least squares regression; LDV p lagged dependent variable; FE p fixed effects. Each column represents one model, including all covariates discussed previously; *t*-statistics are presented in parentheses.

⁺ $p < .10$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 4
Regressions of Individual Hardship Measures on Nonresident Fathers' Involvement

Variable	Received Free Food	Did Not See a Doctor	Phone Turned off	Did Not Pay Utility Bills	Did Not Pay Rent or Mortgage	Utilities Shut off	Evicted	Stayed in Car or Shelter
Pooled cross-sectional logistic regressions (<i>N</i> = 4,669):								
In-kind support	.92 (.69)	1.18 (1.00)	.93 (.76)	.98 (.18)	1.16 (1.35)	1.25 ⁺ (1.65)	1.44 ⁺ (1.71)	1.18 (.74)
Informal cash support (\$100)	.87* (2.19)	1.00 (.06)	.95 (1.31)	.95 (1.30)	.89* (2.09)	.87* (1.97)	.85 (1.25)	.71* (2.34)
Formal cash support (\$100)	.88* (2.19)	.92 (1.20)	.94 (1.52)	1.00 (.00)	.91 ⁺ (1.95)	.91 (1.49)	.84 (1.49)	.70* (2.08)
Days of contact	.99 (1.09)	1.00 (.64)	.99 ⁺ (1.71)	.99* (2.51)	.98** (2.78)	.99 (1.27)	.98 ⁺ (2.05)	.98 (1.45)
Fixed-effects logistic regressions:								
In-kind support	1.31 (1.09)	1.12 (.36)	1.10 (.56)	1.07 (.43)	1.62* (2.31)	1.89* (2.55)	1.41 (.92)	3.51* (2.46)
Informal cash support (\$100)	1.00 (.03)	1.23 (1.29)	1.07 (.92)	.97 (.45)	.95 (.47)	.96 (.29)	.90 (.42)	.58 ⁺ (1.92)
Formal cash support (\$100)	.78* (2.11)	.84 (1.30)	1.05 (.58)	1.00 (.01)	.92 (.90)	.83 (1.32)	.43 ⁺ (1.92)	.78 (.66)
Days of contact	1.00 (.25)	1.00 (.24)	.98 ⁺ (1.93)	.99 (1.01)	.99 (1.17)	.98 ⁺ (1.65)	.95* (1.98)	.94* (2.67)
<i>N</i>	711	441	1,370	1,401	918	632	253	277

Note.—Numbers in cells are odds ratios, and z-statistics are in parentheses. Each column (in each panel) is from a separate regression that controls for all previously discussed covariates (model 3 in table 2). Reduced sample sizes in the fixed-effects logistic regression models reflect that fixed effects are only estimated within individuals and therefore require at least two observations and require a change on the dependent variable from one time point to another.

⁺ *p* < .10.

* *p* < .05.

** *p* < .01.

Table 5Cross-Lagged Models of Father Involvement and Material Hardship ($N = 1,280$)

Lagged Predictor and Lagged Dependent Variable	Outcomes			
	Hardship at 5-Year		Father Involvement Measures at 5-Year	
	OLS Coeff. (<i>t</i> -statistic)	Std. Coeff.	OLS Coeff. (<i>t</i> -statistic)	Std. Coeff.
Days of contact:				
Lagged days of contact	-.002 (.63)	-.02	.46*** (19.77)	.48
Lagged hardship	.66*** (20.70)	.50	-.21 (1.01)	-.03
Informal support:				
Lagged informal support	-.02 (.81)	-.02	27.64*** (12.91)	.34
Lagged hardship	.66*** (20.71)	.50	-4.57 ⁺ (1.88)	-.05
Formal support:				
Lagged formal support	-.02 (.65)	-.02	76.81*** (23.65)	.55
Lagged hardship	.66*** (20.73)	.50	-6.00* (2.14)	-.05
In-kind support:				
Lagged in-kind support	-.17* (2.34)	-.06	.50*** (18.51)	.50
Lagged hardship	.66*** (20.70)	.50	-.02 (1.42)	-.04

Note.—OLS = ordinary least squares regression; std. = standardized; coeff. = coefficient. Each panel presents results from a separate cross-lagged regression that controls for all previously discussed characteristics that do not vary over time; *t*-statistics are presented in parentheses.

⁺ $p < .10$.

* $p < .05$.

*** $p < .001$.