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ORIGINAL PAPER

Family Instability and Material Hardship: Results from the 2008 Survey of Income and Program Participation

Colleen Heflin[1]

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Abstract This study used longitudinal, nationally representative data from the 2008 Survey of Income and Program Participation to explore how each of six sources of instability (employment shocks, household formation shocks, residential changes, income changes, household size changes, and disability shocks) impacted the key domains of material hardship (food insecurity and medical, housing and essential expense hardship). The study found that income shocks and having a person with a disability join the household were the only consistent triggers for all types of material hardship, and that overall, sources of instability had an asymmetrical impact on material hardship; that is, sources of instability did not help households when they were removed as much as they harmed households when introduced. These results provided a nuanced understanding of the household dynamics that result in economic and family instability in the US and provided new evidence regarding why some households were unable to cover basic needs.

Keywords Material hardship · Disability · Instability · Income instability

Introduction

There is a great deal of cross-sectional evidence that households sometimes find it difficult to cover basic needs, such as food, housing costs, medical needs, and other essential expenses (Bauman 1998; Beverly 2001a, b; Iceland and Bauman 2007; Heflin et al. 2009). However, there is little empirical research that documents the events that lead to these types of material hardship. The extant research on transitions in material hardship, i.e., changes in a household's inability to cover some form of basic needs, comes mostly from qualitative accounts (Edin and Lein 1997; Edin et al. 2013; Heflin et al. 2011) and lacks generalizability. In contrast, poverty dynamics are generally much better researched and understood (Bane and Ellwood 1986; Blank 2001; Iceland 1997; Ruggles and Williams 1989; Stevens 1997). As a consequence, the social processes that underlie material hardship, as opposed to poverty, are not well explicated. The Great Recession of 2008 resulted in sharp increases in poverty, food insecurity, and other sources of material hardship such as unmet medical needs, difficulty paying rent or mortgage, and difficulty meeting essential expenses (Heflin forthcoming; Siebens 2013). However, because the events that are potentially financially disruptive to a household differ in source and impact, the effect on material hardship is likely not even across domains of well-being, such as food, housing, medical care and other essential expenses.

This study uses longitudinal data from the nationally representative 2008 Survey of Income and Program Participation (SIPP; http://www.census.gov/sipp/) to explore the sources of economic and family instability that result in movement into material hardship. Specifically, this study examines six different sources of instability (employment shocks, household formation shocks, residential changes, income changes, household size changes, and disability shocks) that might be related to four different types of material hardship (food insecurity, medical hardship, housing hardship and essential expense hardship). While previous studies have focused on a single risk factor for a

✉ Colleen Heflin
heflincm@missouri.edu

[1] Truman School of Public Affairs, University of Missouri, 239 Middlebush Hall, Columbia, MO 65211, USA

single form of material hardship, this study takes a more expansive approach. As a consequence, this study provides a more comprehensive view of the relationships among sources of instability and material hardship and allows for clear comparisons across outcomes of the relative contribution of different sources of instability.

Literature Review

Poverty dynamics in the US are well documented and well understood. The majority of the poor tend to be poor for short periods of time; only a small proportion of individuals experience long spells of poverty (Bane and Ellwood 1986; Blank 2001; Iceland 1997; Ruggles and Williams 1989; Stevens 1997). Changes in household composition, such as becoming a female-headed household or having a child, are responsible for nearly half of entrances into poverty. In contrast, financial changes, such as changes in household income or employment, are responsible for a smaller portion of entrances into poverty (Bane and Ellwood 1986; Blank 2001; McKernan and Ratcliffe 2005).

The empirical literature on the association between income poverty in the US and various hardship measures has indicated they are only moderately correlated with one another (Beverly 2001a; Boushey et al. 2001; Bradshaw and Finch 2003; Mayer 1995; Mayer and Jencks 1989, 1993; Rector et al. 1999). On one hand, poor people are more likely than non-poor people to report a variety of material hardships. For example, Boushey et al. (2001) found that whereas about 13 % of respondents under 200 % of the poverty line reported not having enough food to eat, only 2 % of those over 200 % of the poverty line said the same. Likewise, while 25 % of those under 200 % of the poverty line were unable to make housing or utility payments, only 8 % of those above 200 % of the poverty line reported this difficulty. While the general trend of these findings is fairly intuitive and not remarkable, it is noteworthy that many people in poverty do not report various types of material hardship and some people who are not poor do report hardship. Indeed, one of the best-developed measures of material hardship, the food security scale, has correlated with income and poverty at only about 0.33 (Hamilton et al. 1997). Thus, the available data have suggested that measuring poverty alone is not enough to capture what leads to material hardship and that the underlying social processes are more nuanced.

Iceland and Bauman (2007) found that income poverty is more strongly associated with some hardship measures, such as food insecurity and difficulty paying bills, and less strongly associated with others, such as housing. The authors concluded that some hardship measures, by design, tap into distinct dimensions of well-being. For example, measures of income poverty capture the flow of income that can be used to meet recurring needs but do not attempt to take into account the existing stock of resources a household may have at its disposal. In other words, income poverty does not capture a household's wealth or debt, which may affect the household's ability to meet its expenses. Many of the material hardship measures, however, indirectly account for a household's wealth or debt. For example, individuals with tremendous wealth may not work and thus appear income poor, but they report no material hardships. Conversely, there are people who, despite having high incomes, either hit a rough financial patch and report hardships or have such high fixed costs that they may have trouble meeting basic expenses. Heflin et al. (2007) provided a conceptual model that outlined the many possible determinants of material hardship; for food insufficiency, economic resources are only one factor. In addition to economic resources, the presence of other resources, such as household demands and individual characteristics, may interfere with the ability to cope with scarce resources. Because of these variations in the underlying social processes behind income poverty, it is important to investigate the relationship between specific sources of instability and different types of material hardship.

Linking Sources of Instability Within the Family and Material Hardship

Prior disparate literatures have identified six main sources of household shocks which are examined together in this study under the umbrella term *instability*: employment shocks, household formation shocks, residential changes, income changes, household size changes, and disability shocks. This section briefly reviews prior literature linking the six sources of instability and reviews findings about how they affect a household's risk of material hardship across the four domains of material hardship.[1] While the extant literature has explored economic and family instability, beginning to link it to some forms of material hardship, there is no prior research using nationally representative, short-term panel data to comprehensively examine the main sources of instability across the key domains of material hardship.[2] The sections below, wherever possible, identify how specific sources of instability might operate across the different domains of material

[1] Because the intent of this study is to provide a comprehensive assessment of multiple forms of material hardship, the literature review for each domain is inherently briefer than if a single domain were the focus.

[2] There have been some important studies on material hardship using the Fragile Families Data; however, the multiyear gap between waves prevents the sort of year-transition work explored here.

hardship. By demonstrating the varied pathways through which household shocks affect different forms of material hardship, this study takes the first steps toward building a framework that suggests a nuanced, dynamic process underlying households' response to instability. Specifically, I compare the extent to which the same sources of instability affect different material hardship outcomes; for example: Are employment shocks more likely to lead to some types of material hardship than others? Then, I explore the symmetry of the response to the source of instability; for example: If a job loss increases the likelihood of experiencing a particular domain of material hardship, does getting a new job lessen the likelihood of that same domain of material hardship?

Employment Shocks

The recent Great Recession in the US created unprecedented job loss across the entire income distribution, putting employment shocks in the spotlight. However, even before the Great Recession, Kalleberg (2009) argued that although the economic importance of work to the stability of the American family was increasing, employment itself was generally becoming more precarious. In terms of material hardship, the connection between employment and medical hardship is clear: Households with job loss often also lose their health insurance and, despite the option of Consolidated Omnibus Budget Reconciliation Act (COBRA) coverage, often encounter medical hardship. The relationship of job loss to other forms of material hardship, however, has been less clear. Losing a job may not have an independent effect on the risk of food insecurity, housing hardship or essential expense hardship because, except for providing income, labor market activity does not confer a direct advantage in these domains like it does for medical expenses. Additionally, the lost labor market income may be offset by increases in the value of food stamps (i.e., the Supplemental Nutrition Assistance Program; SNAP), heating assistance or housing assistance. That said, Hill and Ybarra (2014) detailed how job loss can remove workers from access to the formal social safety net, which provides supportive services such as child care subsidies that lessen household consumption pressures, particularly those related to work. Additionally, Western et al. (2012) detailed how a job loss often leads to a deterioration of other social processes that might result in more significant downward mobility. Viewed this way, job loss might be a trigger—perhaps a proximal cause—for a change in economic and family stability that ultimately results in food insecurity, housing hardship or essential expense hardship.

Income Shocks

The prior literature has found that household income measured at a point in time is associated with each of the four domains of material hardship that the present study examines (Beverly 2001a; Boushey and Gundersen 2001; Iceland and Bauman 2007; Mayer 1997; Mayer and Jencks 1989, 1993; Rector et al. 1999). This literature may lead one to predict that changes in income will be associated with nearly corresponding changes in the risk of each form of material hardship. However, it is important to keep in mind that: (1) Changes in total household income tend to vary less than changes in individual earnings; and (2) The volatility of household income has been relatively constant for the last 20 years, despite the observed variation in levels of material hardship (Dahl et al. 2014; Siebens 2013). Furthermore, in spite of these macro-level patterns in income volatility and material hardship, Bania and Leete (2007) linked household income volatility to an increased risk of household food insufficiency and further specified that transitory shocks in income are more likely to affect food insufficiency for households at the lower end of the income distribution. The empirical research here is quite limited though. In fact, although there are a few qualitative studies (Edin and Lein 1997; Edin et al. 2013; Heflin et al. 2011), only one study used nationally representative data and specifically linked income dynamics (in this case resulting from a minimum wage increase) to an inability to pay for housing, medical care or other essential expenses (Sabia and Nielsen 2015).

Disability Shock

Western et al. (2012) argued that good health is key to economic stability and family well-being. Heflin and Butler (2013) further specified that health is linked to material hardship through two mechanisms: First, those with a disability, such as mental illness, may lack the resources and budgetary planning skills that are required to cover basic needs. Second, those with a disability may likely have health care expenses that crowd out other essential expenses. Given these plausible links, it is not surprising that a number of studies have demonstrated that disability status is associated with material hardship (Mayer and Jencks 1989; Rose et al. 2009; Schanzenbach et al. 2014; She and Livermore 2007). Together, this body of research has indicated that disability status increases risk across all four domains of material hardship. However, it is unclear if having a person with a disability leave the household would reduce the strain on household resources immediately.

Household Composition Changes

Family demographers have often cited instability in family composition as a key factor for both individual risk of poverty and its intergenerational transmission (Cherlin 2010; McLanahan and Percheski 2008; McLanahan and Sandefur 1994). Having two wage earners is also cited as an important component of economic stability (Western et al. 2012). Taken together, this literature has provided reason to suspect that changes in family composition will likely affect material hardship, but it is not clear which types of hardship may be affected. One possibility is that the creation (or dissolution) of a marriage union may trigger a change in health insurance coverage for the household, potentially changing the risk of medical hardship. Another explanatory mechanism may be that changes in the economies of scale and absolute consumptive demands are triggered when a household member is gained or lost. For example, although mortgage or rent costs do not usually change when the household size changes, the amount of food and health care consumed may change quite a bit. As a consequence, changes in household size are less likely to influence fixed household costs relative to marginal costs directly related to the number of consumers in the household.

Residential Change

Another important source of instability is residential change, which may alter a household's access to formal services, networks of family and friends, and institutional resources, such as schools and churches. The literature has sometimes conceptualized residential change as a potential cause of material hardship (Jacknowitz and Morrissey 2012; Nord and Parker 2010; Tapogna et al. 2004). For example, Jacknowitz and Morrissey (2012) found that over 40 % of entrances into food insecurity occurred after residential changes. In this way, residential moves are a form of instability that lead to a higher risk of at least one form of material hardship: food insecurity. Residential change has also been expected to be associated with housing hardship because an inability to pay housing costs often leads to a residential change. However, there has been no clear reason to expect that medical hardships or essential expense hardships are related to residential changes. Finally, in the child development field, residential change has been viewed as a direct indicator of material hardship itself because residential change has such widely-known negative impacts on children (Gershoff 2003; Gershoff et al. 2007; Sandstrom and Huerta 2013).

This study advances the literature by using longitudinal, nationally representative data from the time period around the Great Recession to explore the role that each of these six sources of instability plays in the dynamic social processes that result in food insecurity, medical hardship, housing hardship and essential expense hardship. Since all sources of instability except residential change can be examined as a positive or negative shift (e.g., job loss or job gain), there are 11 different variables of interest.[3] This study focused on examining the relationships among specific triggers of instability and domains of experienced material hardship and the symmetry in the response to the positive or negative shift. As detailed below, the findings provide a nuanced understanding of the specific ways that households respond to family and economic instability in the US and deepen our understanding of the triggers associated with spells in which households are unable make ends meet and cover basic needs.

Data

This study analyzed the 2008 panel of the Survey of Income and Program Participation (SIPP). In the SIPP, each interview consists of a core interview that asks standard questions about demographics, labor force participation, and income; and a topical module interview that asks questions on topics that change within a panel from one interview to the next. Interviews were conducted every four months. The 2008 panel was the first SIPP panel to field the Adult Well-Being Topic Module twice within a panel—at Wave 6 in the summer of 2009 and Wave 9 in the summer of 2010—which allowed for analysis of change over time. When survey weights are used, results from analyses of SIPP data are representative of the civilian, non-institutionalized population of the US. I used imputed data, as provided within the SIPP. The total sample contained 18,379 households present at both Wave 6 and Wave 9.[4] To account for the sampling scheme and attrition, I weighted all analyses using household weights from Wave 9.

Methods

I measured the transition in material hardship status using a lagged dependent variable model that incorporated unobserved information about the household in 2009 that might be related to its material hardship status at Wave 9. The lagged dependent model is a good way to control for

[3] As such, the analysis was complex and interactions among these sources of instability are beyond the scope of the paper.

[4] I conducted sensitivity analysis with a sample of households with total household income under 200 percent of the poverty line at one time point. Results on this reduced sample (n = 8058) are similar to those presented here and are available upon request.

historical factors that, while unobserved in the data, might cause current differences in the dependent variable (Wooldridge 2006). Specifically, I used a linear probability model of the following form:

$$Y_{it} = \alpha_i + Y'_{it-1}\theta + X'_{it-1}\beta + D'_t\delta + \varepsilon_{it} \quad (1)$$

where Y_{it} was equal to the hardship status at Wave 9 for medical hardship, housing hardship, food insecurity and essential expense hardship for household i. I ran separate linear probability models (LPM) for each outcome. θ identified the coefficients associated with Y'_{it-1}, a matrix that contained the lagged dependent variable or hardship status for each household across each of the four domains at Wave 6; β identified the coefficients associated with X'_{it-1}, a matrix that contained the demographic characteristics measured for each household head in 2009 (i.e., race/ethnicity, veteran status, education level, metropolitan residency); δ identified the coefficients associated with D'_{it}, a matrix of six different shocks to family stability within each household that occurred between Wave 6 and Wave 9 (i.e., job loss/gain, marriage union/dissolution, household income increase/decrease, residential move, household size increase/decrease, and person with a disability joins/leaves household). Finally, α represented the constant, and ε was the error term for household i at Wave 9.

Because panel data on material hardship at two time points were available, a fixed effects model was also possible. However, I preferred the lagged dependent variable model over the fixed effect model for several reasons. First, from a public policy perspective, I wanted to observe the relationship between time invariant variables, such as race, education and veteran status, and transitions in material hardship status; in the fixed effect model, the time invariant measures would fall out, and these potential relationships would not be identified. Additionally, according to Angrist and Pischke (2009), the lagged dependent variable model tends to produce more conservative causal estimates than the fixed effect model. As such, main analyses use the lagged dependent variable model. However, models using fixed effects are shown in the Table 6 for comparison and are discussed briefly in "Results" section.

Measures

This study explored the change over time in material hardship by examining four domains of material need: housing hardship, medical hardship, food hardship (insecurity), and essential expense hardship. I constructed separate measures of each domain by utilizing a number of dichotomous indicators from the SIPP instrument that were designed for this purpose. *Home hardship* indicated whether, in the prior 12 months, the household did not pay the full amount of rent or mortgage. *Medical hardship* indicated that, in the prior 12 months, a household member was not able to see a doctor, dentist or hospital when they needed care. *Essential expense hardship* indicated whether, in the prior 12 months, the household was unable to meet what it considered were "essential expenses." The *food hardship* measure was constructed from an abbreviated version of the full 18-item food security module used in the Current Population Survey. In this measure, respondents were coded as food insecure if they affirmed they had two or more food security problems from a list of five. Table 1 provides information about the prevalence of each hardship type at each wave. Appendix 1 provides a full description of the wording used to define each hardship measure.

I also included demographic characteristics of the household head, from Wave 6, in all models. I specified the race and ethnicity of the household head in five categories: non-Hispanic White (the reference group), non-Hispanic Black, Hispanic, non-Hispanic Asian and non-Hispanic Other, which included multiracial persons and all other racial and ethnic groups. I identified education level of the household head at four levels: less than high school, high-school diploma, 1–3 years of college, and four or more years of college. I used dummy variables to identify households that contain a veteran and households located in metropolitan counties. To capture any effects from economies of scale, I measured household size by the total number of adults and children in the household. Finally, I included the age of the household head. Table 2 presents descriptive statistics for the full sample and indicates how descriptive characteristics varied by material hardship status at Wave 9.

Table 1 Transitions in material hardship (N = 18,379)

	Medical hardship (%)	Food insecurity (%)	Housing hardship (%)	Essential expense hardship (%)
Hardship at Wave 6 only	6.10	5.65	3.98	7.38
Hardship at Wave 9 only	6.39	5.79	4.21	7.43
Hardship at both Waves	5.95	4.92	3.27	8.06
No hardship reported	81.56	83.64	88.54	77.13

Authors tabulations based on the Wave 6 and Wave 9 panels of the 2008 Survey of Income and Program Participation

All analyses presented are weighted

Table 2 Demographic characteristics by hardship status (N = 18,379)

	Full sample	Medical hardship	Food insecurity	Housing hardship	Essential expense hardship
Race and ethnicity (%)					
Non-hispanic White	71.99	65.81	54.72	55.31	59.73
Non-hispanic Black	12.28	14.69	22.44	21.24	20.93
Hispanic	10.23	13.07	16.87	17.12	13.69
Asian	3.01	2.29	1.95	2.90	1.87
Other	2.39	4.13	4.03	3.42	3.78
Veteran in household (%)	16.78	12.60	10.17	11.21	11.24
Education level (%)					
Less than high school	9.99	14.02	17.34	12.76	14.43
High school	23.00	24.93	27.40	27.40	25.91
1–3 years of college	35.70	44.14	41.37	44.76	44.21
College degree or more	31.31	16.91	13.88	15.08	15.45
Metropolitan area residency (%)	82.17	80.69	81.75	83.84	82.33
Mean number in the household	2.20	2.27	2.35	2.65	2.47
Mean age of household head	51.68	47.36	46.77	43.09	45.77

Authors tabulations based on the Wave 6 demographic characteristics and Wave 9 material hardship status

All analyses presented are weighted

Table 3 presents the six different sources of instability experienced by households and the percentage of households that experienced each of the four forms of material hardship. First, employment shocks identified movements into or out of the labor force—that is, an individual in the household lost or gained a job between the two observation periods. In the full sample, 3.7 % of households had a member who obtained a new job, and 4.4 % lost a job. Second, family structure identified households where a marriage union formed or dissolved between the two observation periods. Results in Table 3 indicate this was rare. In the 1 year observation period, changes to household composition occurred in just over 1 % of households. Third, household size separately identified households that increased or decreased in size. Exactly 5 % of households increased in size, and roughly the same number decreased

Table 3 Shocks to family stability by material hardship status (N = 18,379)

	Full sample	Medical hardship	Food insecurity	Housing hardship	Essential expense hardship
Employment shock (%)					
Obtained a job	3.65	6.05	4.90	6.59	6.19
Lost a job	4.37	6.65	6.59	9.01	7.34
Family formation shock (%)					
Marriage union formed	1.02	1.15	1.38	1.30	1.25
Marriage dissolved	1.16	1.14	1.42	1.66	1.50
Household size increased	5.00	6.38	6.44	8.52	6.90
Household size decreased	4.86	6.66	7.78	8.56	8.14
Disabled person moved-in	3.41	6.48	6.19	7.79	6.69
Disabled person moved-out	2.73	3.78	3.86	3.08	3.51
Residential move	8.37	11.47	12.90	15.97	12.39
Monthly income change (%)					
Income loss >$750	18.53	19.52	19.39	25.27	22.42
Income gain >$750	21.37	22.55	17.22	23.36	20.68

Authors tabulations based on the change in family stability between Waves 6 and 9 and Wave 9 material hardship status

All analyses presented are weighted

in size. Given this low level of observed household size change during the 1 year time period, I made no further attempt to separate household size changes by entrance or exit of a child versus an adult. Fourth, I separately identified households that had a change in the number of persons with a disability. As noted previously, the literature has indicated that a strong relationship usually exists between disability status and material hardship. Disability was identified by the presence of a household member with a work-limiting disability. Differences here could mean a stable household member's disability status changed or that the household composition changed, i.e., a person with a disability joined or left the household. In the sample, 3.4 % of all households added a person with a disability, and 2.7 % had a person with a disability leave the household. Fifth, I identified households that had a residential change over the 12-month observation period. In the sample, 8.4 % of households experienced a residential change. Finally, I identified households that had a change in income, defined here as having total monthly household income go up or down by more than $750 between the two observation periods, where $750 represents a one decile income change. I categorized households into three groups: income losses of approximately one quintile, stable income (the reference group) and income gains of approximately one quintile. In the sample, 18.5 % of households experienced income losses and 21.4 % experienced income gains. Results were qualitatively similar across other income cut-points. Note that I used a measure of total household income, which means I did not measure individual participation in social welfare programs separately and instead used aggregate income from all sources.

Results

I ran a separate model for each of the four domains of material hardship. Table 4 presents results for medical hardship and food hardship, and Table 5 presents results for housing hardship and essential expense hardship.[5] In addition to the lagged dependent variable, I included controls for hardship status observed in the three other domains at Wave 6, demographic controls measured at Wave 6, and the six sources of instability defined above. Using linear probability models, point estimates can be interpreted as the percentage point change in the probability of experiencing hardship related to a one unit increase in the independent variable. All analyses were weighted, and statistical significance is shown using robust standard errors. The coefficients on demographic control variables were found to be consistent with other reports in the literature that have examined material hardship outcomes (Heflin et al. 2012; Heflin and Butler 2013).

Medical Hardship

When all else was held equal, losing a job was associated with a 3.76 percentage point increase in the probability that a household reported medical hardship. The base probability for medical hardship is 12.7 %, meaning a 3.76 percentage point increase represents a nearly 30 % increase. Changes in marital status, household size, income, and residential location were unrelated to the probability of experiencing medical hardship. However, having a person with a disability join the household was associated with a 6.36 percentage point increase in the probability of experiencing a medical hardship. Prior experience with all four forms of material hardship (i.e., reported at Wave 6) was associated with an increased probability of reporting medical hardship.

Food Hardship

An increase in monthly income (greater than $750) reduced the probability of being food insecure by 2.58 percentage points, or a 9 % decrease over the base probability of 11.2 %. However, decreases in monthly income were found to be unrelated to the probability of reporting household food insecurity. Changes in employment status, residential location, household size, and the marital status of the household head did not affect the risk of being food insecure. Finally, having a person with a disability join the household was associated with a 4.33 percentage point increase in the probability of reporting food insecurity. Prior experience with a medical hardship, essential expense hardship or food hardship all increased the probability of reporting food insecurity.

Housing Hardship

Losing a job was associated with a 4.38 percentage point increase in the probability of reporting housing hardship, or a 58 % increase over the base probability of 7.6 %. Having a significant decrease in monthly income was associated with a 1.72 percentage point decrease in the probability of reporting a housing hardship. A household size increase was associated with a 2.15 percentage point increase in the probability of reporting housing hardship, and moving was associated with a 1.97 percentage point increase. A change in the disability status of household members was a strong predictor of housing hardship but

[5] In Tables 4 and 5, coefficient subscripts indicate that the coefficient for the positive transition was statistically different from the negative transition. Differences between models noted as such have been tested and found to be statistically significant using a joint test.

Table 4 Lagged dependent variable models of material hardship status at Wave 9 (N = 18,379)

Covariates	Medical hardship		Food insecurity	
	Coefficient	SE	Coefficient	SE
Hardship status at Wave 6				
Medical hardship	0.3250	0.0131***	0.0896	0.0111***
Housing hardship	0.0373	0.0165*	0.0270	0.0164
Food insecurity	0.0969	0.0122***	0.2858	0.0137***
Essential expenses hardship	0.0909	0.0122***	0.1130	0.0119***
Family shocks between Wave 6 and 9				
Got a job	0.0267	0.0170	−0.0091	0.0169
Lost a job	0.0376	0.0156*	0.0245	0.0144
Got married	−0.0481	0.0271	0.0043	0.0256
Divorced	−0.0202	0.0243	0.0018	0.0275
Income decrease >$750	0.0022	0.0070	−0.0063[a]	0.0065
Income increase >$750	0.0052	0.0063	−0.0258[a]	0.0056***
Residential move	−0.0055	0.0103	0.0145	0.0100
Disabled individual added to household	0.0636[a]	0.0167***	0.0433[a]	0.0164**
Disabled individual left household	0.0038[a]	0.0161	−0.0073[a]	0.0172
Household increased in size	0.0100	0.0126	0.0061	0.0120
Household decreased in size	0.0208	0.0159	0.0240	0.0151
Demographic controls				
Total household size at Wave 6	−0.0074	0.0020***	−0.0028	0.0021
Age of household head at Wave 6	−0.0009	0.0002***	−0.0007	0.0002***
Race/ethnicity of household head at Wave 6				
Non-hispanic White (excluded)				
Non-hispanic Black	−0.0175	0.0084*	0.0506	0.0090***
Hispanic	−0.0080	0.0098	0.0336	0.0103**
Asian	0.0027	0.0120	0.0009	0.0109
Other	0.0395	0.0169*	0.0373	0.0158*
Veteran in household at Wave 6	−0.0063	0.0058	−0.0123	0.0051*
Education level of household head at Wave 6				
Less than high school	0.0256	0.0100*	0.0312	0.0104**
High School (excluded)				
1–3 years of college	0.0142	0.0068*	0.0026	0.0065
College degree or more	−0.0279	0.0064***	−0.0289	0.0061***
Metropolitan status at Wave 6	−0.0003	0.0060	−0.0003	0.0056

[a] Indicates coefficient of transition is statistically different at the .05 level from symmetrical transition using a joint test of equality

* $p < .05$; ** $p < .01$; *** $p < .001$

was not entirely symmetric in magnitude: Having a person with a disability move into the household increased the probability of household hardship by 5.02 percentage points, but having a person with a disability move out of the household lowered the probability by only 2.96 percentage points. A change in the marital status of the household head was not related to the probability of experiencing housing hardship. Once again, prior experiences with each form of material hardship (i.e., reported at Wave 6) increased the probability of reporting a housing hardship at Wave 9.

Essential Expense Hardship

Households in which the head lost a job had a 6.00 percentage point higher probability of reporting an essential expense hardship, or a 37 % increase over a base probability of 16.1 %. Interestingly, households in which a household head gained a job also had a 4.32 percentage point increase in the probability of essential expense hardship, perhaps because of job-related expenses (e.g., transportation, child care, clothes, tools). Households that experienced a loss of monthly income (more than $750)

Table 5 Lagged dependent variable models of material hardship status at Wave 9 (N = 18,379)

Covariates	Housing hardship		Expense hardship	
	Coefficient	SE	Coefficient	SE
Hardship status at Wave 6				
Medical hardship	0.0304	0.0099**	0.1152	0.0124***
Housing hardship	0.2850	0.0171***	0.1103	0.0182***
Food insecurity	0.0515	0.0110***	0.1404	0.0134***
Essential expenses hardship	0.0881	0.0108***	0.2636	0.0140***
Family shocks between Wave 6 and 9				
Got a job	0.0160	0.0142	0.0432	0.0184*
Lost a job	0.0438	0.0139**	0.0600	0.0163***
Got married	−0.0299	0.0211	−0.0246	0.0294
Divorced	0.0068	0.0286	0.0002	0.0317
Income decrease >$750	0.0172[a]	0.0062**	0.0178[a]	0.0077*
Income increase >$750	0.0026[a]	0.0051	−0.0113[a]	0.0067
Residential move	0.0197	0.0098*	0.0022	0.0114
Disabled individual added to household	0.0502[a]	0.0159**	0.0803[a]	0.0179***
Disabled individual left household	−0.0296[a]	0.0127*	−0.0226[a]	0.0172
Household increased in size	0.0215[a]	0.0109*	0.0208	0.0135
Household decreased in size	0.0132[a]	0.0139	0.0419	0.0173*
Demographic control				
Total household size at Wave 6	0.0042	0.0019*	0.0033	0.0023
Age of household head at Wave 6	−0.0010	0.0001***	−0.0015	0.0002***
Race/ethnicity of household head at Wave 6				
Non-hispanic White (excluded)				
Non-hispanic Black	0.0220	0.0076**	0.0502	0.0098***
Hispanic	0.0196	0.0093*	−0.0078	0.0111
Asian	0.0218	0.0109*	−0.0134	0.0127
Other	0.0010	0.0138	0.0344	0.0177
Veteran in household at Wave 6	0.0047	0.0050	−0.0113	0.0061
Education level of household head at Wave 6				
Less than high school	0.0009	0.0085	0.0327	0.0111***
High school (excluded)				
1–3 years of college	0.0012	0.0059	0.0131	0.0074*
College degree or more	−0.0241	0.0055***	−0.0452	0.0071***
Metropolitan status at Wave 6	0.0045	0.0047	0.0072	0.0064

[a] Indicates coefficient of transition is statistically different at .05 level from symmetrical transition using a joint test of equality

* $p < .05$; ** $p < .01$; *** $p < .001$

had a 1.78 percentage point higher probability of reporting an essential expense hardship. Consistent with the literature, households that had a personal with a disability join had an 8.03 percentage point higher probability of reporting an essential expense hardship. Although the marital status of the household head did not change the probability of essential expense hardship, losing a household member increased the probability by 4.19 percentage points. Again, reporting each of the other types of hardship at Wave 6 was associated with an increased probability of reporting an essential expense hardship.

In sensitivity models, shown in Table 6, the probability of experiencing each form of material hardship is modelled using fixed effect models that control for unobserved heterogeneity. Results suggest that the lagged dependent variable models in Tables 4 and 5 suffer from attenuation bias: Specific family shocks are more likely to be statistically significant predictors of material hardship domains using fixed effects instead of lagged dependent variable

Table 6 Fixed effect models of the change in material hardship

Variables	(1) Food insecurity	(2) Medical hardship	(3) Housing hardship	(4) Expense hardship
Family transition				
Got a job	0.020*	0.040***[a]	0.017**	0.046***[a]
	(0.008)	(0.008)	(0.006)	(0.008)
Lost a job	0.023***	0.006[a]	0.029***	0.009[a]
	(0.007)	(0.008)	(0.006)	(0.007)
Got married	0.018[a]	0.020	0.004	−0.025
	(0.014)	(0.015)	(0.011)	(0.014)
Divorced	−0.021[a]	−0.004	−0.014	−0.036*
	(0.015)	(0.016)	(0.012)	(0.015)
Income decrease >$750	−0.022***	−0.000	0.014***	0.004[a]
	(0.004)	(0.004)	(0.003)	(0.004)
Income increase >$750	−0.026***	0.008*	0.015***	−0.006[a]
	(0.004)	(0.004)	(0.003)	(0.004)
Disabled individual added to household	0.015	0.036***	0.020***[a]	0.039***[a]
	(0.008)	(0.008)	(0.006)	(0.008)
Disabled individual left household	0.024**	0.019*	0.001[a]	0.016[a]
	(0.008)	(0.009)	(0.006)	(0.008)
Household increased in size	0.013*[a]	0.009	0.023***[a]	0.013*[a]
	(0.006)	(0.007)	(0.005)	(0.006)
Household decreased in size	0.043***[a]	0.006	0.018**[a]	0.034***[a]
	(0.007)	(0.008)	(0.006)	(0.007)
Material hardship status change				
Expense hardship	0.255***	0.276***	0.345***	
	(0.005)	(0.005)	(0.004)	
Housing hardship	0.111***	0.055***		0.575***
	(0.006)	(0.007)		(0.006)
Medical hardship	0.183***		0.029***	0.245***
	(0.005)		(0.004)	(0.005)
Food insecurity		0.210***	0.068***	0.261***
		(0.005)	(0.004)	(0.005)
Constant	0.042***	0.048***	−0.004*	0.050***
	(0.002)	(0.002)	(0.002)	(0.002)
Observations	38,470	38,470	38,470	38,470
R-squared	0.23	0.21	0.30	0.42

Standard errors in parentheses

[a] Indicates coefficient of transition is statistically different at .05 level from symmetrical transition using a joint test

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

models. However, fixed effect model results are consistent in that family transitions, both positive and negative family transitions, tend to increase the probability of moving into material hardship conditions. Additionally, the sign and magnitude of each form of family instability differs across material hardship domains, confirming results shown in the main tables that complex social processes unique to each hardship type are at play.

Discussion

Previous research has explored the role of a single source of family or economic instability on a single domain of material hardship; however, this approach overlooks the complexities that underlie social processes that determine material hardship. In this study, I used lagged dependent variable models and longitudinal data from the 2008 SIPP

to explore the relationships among six sources of instability (employment shocks, household formation shocks, residential changes, income changes, household size changes, and disability shocks) and four types of material hardship (medical, food, housing and essential expense). In so doing, I explored how different forms of economic and family instability, instead of acting uniformly on material hardship, might trigger different types of material hardship. Furthermore, this study explored how the introduction and removal of a source of instability does not have symmetric responses in terms of experiences of material hardship. Results showed a person with a disability joining the household as the only consistent trigger associated with each of the four domains of material hardship. A change in marital status was consistently not associated with material hardship. Residential moves and household size increases were associated with housing hardship, but not with any other type of material hardship. Decreases in monthly income (of $750 or more, or one income quintile) were associated with an increased risk of essential expense hardship and housing hardship, but increases in monthly income (of $750 or more, or one income quintile) were associated with a decrease in the probability of food insecurity only.

Overall, while experiencing a source of instability may increase the risk of material hardship, removing the instability often does not reduce the risk of hardship or reduce it by the same magnitude. This finding is robust to different methodological specification and is even more prevalent in the fixed effect models than in the lagged dependent models, suggesting that transitions, both negative and positive, may create a state of economic disequilibrium for low-income households. Importantly, this pattern of results is not observable in more narrow studies of a single source of family or economic instability.

A limitation of this analysis is that while the SIPP is nationally representative and unique for being longitudinal, the data were collected at only two time points. Additional observation points would yield a richer analysis that may help disentangle causal relationships among sources of instability and material hardship. However, the results of the present study provide an important first glimpse of the possible relationships among various sources of instability and forms of material hardship experienced by households. In particular, the results confirm that some forms of hardship, such as medical expense hardship, are sensitive to only some sources of instability, and that on the whole, sources of instability do not help households when they are removed at the same magnitude as when they are introduced. These results are suggestive of critical social processes happening at the household level.

Another limitation is that this analysis examines a change in the disability status of a household member, but the measure of disability status is not equivalent to the measure of a health shock. The SIPP does not provide strong measures of health at the same time intervals as the material hardship measures. As such, researchers cannot create a measure of a health shock that is coterminous with material hardship change. This limitation constrains the applicability of the present findings given that many people with serious health problems do not have disabilities and many people with disabilities are quite healthy. Nonetheless, the findings speak clearly about the importance of disability status in relation to reports of material hardship.

Finally, since the data were collected in the summer months of 2009 and 2010, a period of remarkably poor economic conditions in the US, it is impossible to know if results are generalizable to other times. For example, the housing mortgage crisis was particularly acute during 2009 and 2010. Additionally, federal food and nutrition policy offered increased levels of SNAP benefits during this same time, which might have decreased food hardships. However, because the 2009–2010 SIPP is the only nationally representative panel available that includes all the domains of material hardship, the data and results of this study are still of significant interest. In fact, given the reach and depth of the Great Recession, data from and analysis of this specific time period could be of particular value to inform policy discussions.

Despite its limitations, this study has several implications for researchers who are interested in understanding family processes in low-income households. First, the results suggest that in addition to income, i.e., the financial ability to make ends meet, households use other strategies to help avoid material hardship. The finding that shocks to household stability have inconsistent impacts on the various forms of material hardship suggests that other household-level processes are effective in helping households juggle the demands of essential needs. The results also indicate that the fluidity of household composition has both negative and positive implications in low-income households, depending on the domain of material hardship. In other words, gaining or losing a household member appears to have different effects on hardship and thus may be a strategy that low-income households use in varying ways to meet competing demands.

Finally, the results provide strong support for the growing literature that tightly links disability status and material hardship in the US. The results of this study demonstrate that having a person with a disability join the household is not only associated with an increase in medical hardship, as might be expected, but also increased food insecurity, housing hardship, and essential expense hardship. Furthermore, the loss of a person with a disability from the household does not reduce the risk of any of the four forms of material hardship. This finding suggests that

perhaps even after the person with a disability is gone, the household still expends resources supporting her, or perhaps that there is a threshold that, once crossed due to the presence of a person with a disability in the household, is difficult from which to return.

Indeed, the consistently high association of each form of material hardship between Wave 6 and Wave 9, approximately 1 year apart, suggests that there might be such a threshold dynamic across the various forms of instability for many households. The consistently high association between waves suggests that once a household shock occurs, households lack resilience and have difficulty regaining equilibrium. Further research examining the social processes through which households regain equilibrium (i.e., the ability to once again cover basic needs) would provide great insight into this area. Results would allow for the formulation of effective policy solutions to reduce the risk of material hardship during common household, economic or residential transitions.

Appendix 1: Wording for Material Hardship Measures

Medical Hardship

Coded 1 if either question equal to "yes."

"In the past 12 months was there a time (YOU/ANYONE IN YOUR HOUSEHOLD) needed to see a doctor or go to the hospital but did not go?"

"In the past 12 months was there a time (YOU/ANYONE IN YOUR HOUSEHOLD) needed to see a dentist but did not go?"

Food Insecurity

Coded 1 if number of total affirmative responses to food insecurity questions is greater than 1.

(1) "In the last four months the food that (I/WE) bought just didn't last and (I/WE) didn't have money to get more." Answers "often true" or "sometimes true" equal 1.

(2) "(I/WE) couldn't afford to eat balanced meals." Answers "often true" or "sometimes true" equal 1.

(3) "In the past four months did you or the other adults in the household ever cut the size of your meals or skip meals because there wasn't enough money for food?" Answers "yes" equal to 1.

(4) "In the past four months did you or the other adults in the household ever eat less than you felt you should because there wasn't enough money to buy food?" Answers "yes" equal to 1.

(5) "In the past four months did you or the other adults in the household ever not eat for a whole day because there wasn't enough money for food?" Answers "yes" equal to 1.

Housing Hardship

Coded 1 if respondent answered "yes" to the question "Was there any time in the past 12 months when (YOU/YOUR HOUSEHOLD) did not pay the full amount of the rent or mortgage?"

Essential Expense Hardship

Coded 1 if respondent answered "yes" to the question "During the past 12 months, has there been a time when (YOU/YOUR HOUSEHOLD) did not meet all of your essential expenses?"

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Colleen M. Heflin is a Professor at the Truman School of Public Affairs at the University of Missouri and Co-Director of the Population, Education and Health Center and the University of Missouri Research Data Center. Dr. Heflin earned a Ph.D. in Sociology from the University of Michigan and conducts research focused on social policy, the well-being of vulnerable populations, and the causes and consequences of material hardship.