

NOT HAVING ENOUGH: THE DETERMINANTS AND CONSEQUENCES OF
HOUSEHOLD MATERIAL HARDSHIP

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Family background has a strong and well-established predictive effect for individuals' lifecourse trajectories. Material hardship is often thought of alongside other measures of family background, particularly when considering low income or low human capital circumstances. There is rather limited research on factors that predict material hardship, and limited research on its effects. In this dissertation I explore some of the factors that affect households' experience of material hardship and some of the consequences of material hardship that bear on the individuals long-term mobility trajectories.

For this research I use data drawn from the Survey of Income and Program Participation, which includes a rich set of material hardship measures. I use the data first to predict the influence of household structure and of immigrant headship on the likelihood of financial and material hardship. I next consider how material hardship affects mobility trajectories, examining the relationship between material hardship and children's experience of in-grade retention. Finally, I consider how the relationship between material hardship and in-grade retention changes over time, and how it is affected by variation in state welfare policy.

With respect to determinants of hardship, I find that extended family households offer protection against financial hardship and against some forms of material hardship, and that extended family households formed among immigrants offer additional protection against hardship. With respect to mobility trajectories, I find that material hardship, particularly food insufficiency, is predictive of in-grade. Food insufficiency is associated with an increase in the likelihood of in-grade retention comparable to that seen for disadvantaged minorities.

The implications of this research are twofold. First, as extended family households have become more common in recent years and more common among disadvantaged families, household extension may serve to lessen the incidence of hardship or may lessen its severity. Second, material hardship, especially food insufficiency, is an important component of individuals' backgrounds in determining children's outcomes. As the food insufficiency effect is comparable to that of minority status – which is well established as a predictor of poor outcomes, material hardship is a component of background that should be considered in examining other consequential steps in mobility processes.

BIOGRAPHICAL SKETCH

Erik Schmidt was born in Chico, California in 1982. He graduated from the University of California at Los Angeles with a Bachelor of Arts in Sociology in 2005. He began graduate study at Cornell University in 2006 and completed his Ph.D. in Sociology in August 2015.

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CHAPTER 1

INTRODUCTION

While research into inequality, and processes of social stratification and intergenerational mobility universally incorporates measures of individuals' family background in estimating individuals' mobility trajectories, a set of consequential characteristics of individual backgrounds is as universally neglected. Measures of material hardship capture dimensions of individuals' and families' lived experience that are not captured by – although they are often inferred from – measures of income or by measures of educational and occupational attainment often used to gauge the influence of background on life chances. Similarly, these other dimensions of background and their influences have been and continue to be extensively researched, while comparably little effort has been made in understanding the manner in which material hardship affects outcomes or in understanding the dynamics underlying the occurrence or avoidance of hardship.

The studies that form this dissertation bring additional focus to measures of material hardship, and to the ways in which material hardship is related to other characteristics of family background. The studies also assess the ways in which material hardship, in conjunction with more commonplace measures of family background, affects the mobility trajectories of children – and thereby their life chances. Finally, the studies consider how the incidence of hardship is affected by

variation in the policy environment that disadvantaged families face, and how those differences impact the relationship between hardship and mobility processes.

The first study considers the way in which the experience of material hardship is structured by family structure and immigration status. The second study considers how material hardship, jointly with other measures of family background, affects children's likelihood of in-grade retention during primary schooling – an experience that has far-reaching implications by virtue of its implication in subsequent tracking decisions which, themselves have further deleterious effects on life chances. The final study considers whether the relationship between material hardship and life chances changes between the mid-1990s and mid-2000s by revisiting the relationship between material hardship and children's in-grade retention, considering changes in the relationship over time and whether variation in the policy environment stemming from welfare reform affects the relationship between hardships and the likelihood of retention.

These studies make progress toward a more thorough understanding of the complex interactions underlying the processes by which individuals' life chances are shaped by the environment in which they live. These measures of material hardship hold much promise as their measurement is not a particularly difficult or prohibitive addition to existing surveys, as demonstrated by the common adoption of food insecurity measures following the USDA's creation of a general food insecurity survey module. Moreover, various forms of material hardship are already targeted by a number of governmental programs, suggesting popular support for remediation

based upon the assumption that material hardship exerts a strong effect on the quality of life and the life chances of individuals, and children particularly.

BACKGROUND

A long standing body of research on lifetime mobility finds individuals' family backgrounds to be highly consequential for mobility chances and eventual educational, occupational, and income attainment (see Blau and Duncan 1967; Duncan and Brooks-Gunn 1997, for example). Family background affects life outcomes through its influence on shorter-term processes and outcomes – such as health and educational achievement in childhood (Aber, et al. 1997; Smith, Brooks-Gunn and Kabanov 1997) – that exert influence both individually and in concert with other outcomes and processes to cumulative effect on life trajectories. Extending the logic underlying Duncan, Featherman and Duncan's (1972) assertion that the provision of necessary resources is necessary for children's eventual success, I focus on the influence of material hardship – using explicit measures of household lack of material goods and services – in processes that are of consequences for children's mobility trajectories.

In the long tradition of mobility studies, family background in youth is almost universally operationalized using measures of family or household income, with level of parental income and parental occupation also often incorporated with income in the generation of indices of socioeconomic status. While these measures, particularly income, capture the resources that a household has at its disposal to meet needs, they do not capture whether and what necessary resources are provided – in line with Duncan, Featherman and Duncan's (1972) assertion cited previously. To this point,

Mayer and Jencks (1989) highlight the fact that income explains only 24 percent of the variation in families' experiences of material hardship. Further, about half of households with incomes below the poverty threshold do not experience material hardship, while about one in eight non-poor households report at least one form of material hardship (Federman, et al. 1996). This is reflected in research on material hardship as measures of low income and material hardship are broadly observed to have a low level of correspondence with one another as contrasted with the incidence suggested by popular discourse.

The extant research on material hardship is largely limited to descriptive analysis, but does suggest that hardship has the capacity to affect mobility trajectories. For example, material hardship is implicated in ratings of children's health (Frank, et al. 2010; Yoo, Slack and Holl 2007) and behavior (Gershoff, et al. 2007; Zilanawala and Pilkauskas 2012), and the mental health of both adults and children (see Heflin and Iceland 2009; Dunifon and Kowaleski-Jones 2003, for example), all of which are tied to labor market and later life success.

THEORETICAL FRAMEWORK

The overarching theoretical framework that motivates this investigation draws upon the related theories of cumulative disadvantage and overlapping disadvantage. Cumulative disadvantage follows from Merton's (1968, 1988) Matthew effect and the body of research that has adapted its logic of accumulating advantage across the lifecourse to account for disadvantageous, rather than beneficial, circumstances and life outcomes. Merton's concept of cumulative advantage – that the small initial

advantages that an individual or group possesses grow and accumulate over time – is inverted such that differences in initial disadvantages across individuals and groups serve to directly and indirectly affect the disproportionate accumulation of further disadvantage across the life cycle.

Cumulative disadvantage is explanatory in circumstances under which disadvantages that an individual or group faces serve to increase the likelihood of disadvantageous life outcomes and exacerbate the impact of other disadvantages that individuals face. Cumulative disadvantage is not at all unfamiliar in research on stratification and mobility, its implicit inclusion in causal accounts of mobility dates at least to Duncan & Blau's (1967) *The American Occupational Structure*, where the diverging trajectories of blacks and whites over time is highlighted. More recently cumulative disadvantage is implicit in discussion of neighborhood effects (Sampson, et al. 2002), and in studies showing that the magnitude of the detriment conferred varies with the length of exposure to disadvantaged environments (Alexander and Entwisle 1988; Duncan, et al. 1998; Garasky 1995). The theoretical construct of cumulative disadvantage is essential to, if not always explicit in, the thinking that guides the study of stratification and mobility and our conceptualization of the processes that underlie mobility trajectories.

In addition to cumulative disadvantage, I draw on the related theory of overlapping disadvantage. Overlapping disadvantage, also referred to as multiple disadvantage or intersectionality, informs bodies of work in criminology (Parker and McCall 1999), legal studies (Kahn Best, et al. 2011), and feminism (King, 1988), as well as sociology (Cotter, et al. 1999; O'Connor, 2001; Alon, 2007, see DiPrete and

Eirich 2006 for an overview). Overlapping disadvantage is based on the premise that various status groups face disadvantages, and individuals who belong to multiple disadvantaged status groups face greater disadvantage than the sum of those disadvantages inherent to each group.

Following from these two theoretical constructs, I expect material hardship to be more common among those of disadvantaged status groups as might be predicted following from overlapping disadvantage – and as is suggested by the existing, largely descriptive research. Assuming this to be the case, I expect those facing other disadvantages will be more negatively impacted by experiences of material hardship. Finally, I expect material hardship to – as a form of disadvantage – to affect mobility trajectories pursuant to cumulative disadvantage processes.

STUDIES

The role that material hardship plays in affecting mobility trajectories, in conjunction with household income and other measures of family background, constitutes a consequential gap in the accumulated knowledge of mobility processes and our conception of the consequences of family background more generally. By identifying the effects of different types of material hardship, and family and household characteristics that affect the incidence of hardship, it is possible to gain a more clear understanding of the way in which this under-explored dimension of background affects life chances and of policy levers that may serve to ameliorate the effect of hardships or even prevent their incidence. To this end, this dissertation addresses three questions.

Influence of Extended Household Structure on the Incidence of Material Hardship

First, I explore the factors affecting the incidence of material hardship by considering the impact of household structure on the likelihood that households experience material hardship, and – drawing from arguments that motivations for the formation of extended households differs with individuals’ nativity – what further impact the immigration status of the householder has on the relationship between household structure and the likelihood of material hardship. Family structure affects a broad range of child outcomes and life chances. Single parent families are particularly disadvantaged relative to married-parent families (McLanahan & Sandefur 1997), as are cohabiting families (Brown 2004). Interestingly, particularly with reference to material hardship, the economic resource constraint that accompanies these alternative family structures appears to affect children’s disadvantage much more than do differences in parental behavior (Thomson, Hanson and McLanahan 1994). In contrast to the economic disadvantage inherent to single-parent and cohabiting households, a body of research (Goldsheider & Goldsheider 1999; Reily & Reily 1993; Speare & Avery 1993) indicates that extended households – multigenerational households and households including additional related and unrelated adults, and often their children – may be formed to offset need or expected resource shortfalls. Additionally, research suggests that immigrant populations form extended households for reasons in addition to the more purely economic concerns that motivate extended household formation among the non-immigrant populations (Angel & Tienda 1982; Baca Zinn & Wells 2000; Blank 1998; Sarkisian, Gerena & Grestle 2007; Van Hook

& Glick, 2007). Accordingly, the first study explores whether extended family household forms are protective against hardships and whether extended families households formed by immigrants are further protective against hardship. In line with prior research, I expect that household extension will result in comparable or lower levels of reported hardship. Following the argument that immigrants form extended households for reasons other than and in addition to those economic motivations that guide household extension among non-immigrants, I expect that immigrant extended households will face lower incidence of hardship. Following the theoretical discussion above, immigrant status may serve as either a protective or injurious status in the context of the extended household depending upon whether hardship likelihoods are exacerbated or aggravated by the interaction of immigrant status and extended household structure.

Material Hardship Effects on In-Grade Retention

I next consider the way in which material hardship affects mobility processes by exploring the effect of hardship on the likelihood that children are retained in primary grades. I consider the outcome of in-grade retention owing to the strong association between educational attainment and individuals' eventual occupational and income attainment, and the strong association between experiences of in-grade retention and lower levels of subsequent academic performance and ultimate attainment. As previously highlighted, family background during development is consequential for individual mobility trajectories, and as a consequence, for intergenerational mobility chances. The experience of material hardship is part of the

set of background characteristics that affect mobility chances, as is suggested by virtue of the fact that eligibility for social programs that target material hardship is contingent on low levels of family income – a component of background that is consistently found to be very consequential for attainment in multiple domains (see Alexander and Entwisle 2003 for example). Despite this, material hardship is rarely incorporated in analyses of mobility chances.

Following from this gap in knowledge about material hardship's role in mobility processes, the second study focuses on the way in which in-grade retention – an event that is consequential for life chances through its influence on educational, and eventual occupational and income attainment – is affected by the experience of household material hardship in conjunction with income and other measures of children's household background. If material hardship is a function of household income or human capital, hardship should have no effect on the likelihood of retention beyond that inherent to the measured difference in income and human capital across students' households. Further, following from the theories of cumulative disadvantage and overlapping disadvantage discussed previously, I expect that children who face multiple forms of disadvantage will be more disadvantaged with respect to the likelihood of their retention given incidents of material hardship than will children who do not face otherwise similarly disadvantaged backgrounds. Following from the association between family background as typically studied and success in a variety of life course transitions, and drawing on the cumulative disadvantage literature, I expect household material hardship to be associated with greater likelihoods of in-grade

retention in a manner analogous to that in which lower household income or parental education are disadvantageous to children.

Hardship Effects in the Context of Policy Change

Finally, I consider the capacity for time, and variation and change in the policy environment to affect the association between material hardship and mobility trajectories. To do this, I revisit the outcome of in-grade retention and take advantage survey data that is separated by time and state-level variation in the rules governing national social programs. Following the investigation of the ways in which family and household structure affect the experience of material hardship, and of the influence of material hardship on mobility trajectories in the first two studies, the third study turns to examining the extent to which the relationship between hardship effects change across times and whether variation in policy rules serve to mediate the relationship between material hardship and mobility processes. To this end, I consider the impact of welfare reform on the incidence of material hardship, and on the relationship between material hardship and in-grade retention. Welfare reform has the capacity to affect households' capacity to meet need by impacting their income (by encouraging employment and by affecting the level of benefits received), and costs (transportation, child car, etc.). If household resources are assumed to be transmutable – to some extent – in the service of meeting needs, or if reforms affect the dynamics underlying individuals' and families' ability to meet demands, it is expected that the impact of experiences of material hardship will be affected. In the context of policy reform and the unevenness of the level of TANF benefits and the harshness of rules governing

eligibility and sanctioning across states, some families may be additionally disadvantaged relative to similar families in other states. This additional disadvantage has the capacity to compound the injurious effect of material hardship further. Following the logic of multiplicative, cumulative disadvantage, I expect that welfare reforms, where they serve to decrease the resources base of households, will serve to increase the likelihood that children in households that report material hardship will be retained.

DATA

The three analyses outlined above all analyze data drawn from the Survey of Income and Program Participation (SIPP), collected by the Census Bureau. The SIPP is uniquely suited to studying these questions as it includes a comprehensive set of material hardship measures, assessing multiple dimensions of hardship while other surveys typically cover one type of hardship. Moreover, other nationally representative datasets typically do not inquire about material hardship. In addition to the hardship measures, the SIPP includes a range of commonly employed measures of family and household background, allowing for an examination of the effects of children's background in conjunction with that of material hardship and for the determination of the extent to which hardship effects may be captured by other background effects when hardship measures are excluded from analyses.

The SIPP is structured such that respondents are interviewed once every four months about the previous four months' experiences. The SIPP includes a core set of questions that are consistent from one survey wave to the next and a topical module

set of questions, the content of which changes from one survey wave to another. In the SIPP panels used for these studies, the material hardship questions used for analysis are included in a topical module only once.

The 2004 SIPP yields a sample of 24,214 households used for analysis in the first study, and a sample of 7,609 children used in the third study's analysis. The 1996 SIPP yields a sample of 17,893 households used in the first analysis, and a sample of 2,820 children used in the analyses in the second and third studies.

SUMMARY

Decades of research have established family background as highly influential for individuals' mobility chances, for all of this research little is understood about the way in which material hardship interacts with other dimensions of family background to affect mobility trajectories. This dissertation seeks to understand some of the pathways that affect the household experience of material hardship, including household structure and policy change, in addition to the way in which the incidence of material hardship has shifted in the context of the change in the labor market noted above. Additionally, this dissertation assesses the way in which material hardship, jointly with more common measures of background, affects the likelihood of elementary in-grade retention, an event of notable consequence for student's educational – and by extension occupational and income – attainment, and thereby an event that is quite informative in understanding material hardship's bearing on mobility chances.

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CHAPTER 2

HOUSEHOLD EXTENSION AND HARDSHIP AMONG IMMIGRANT AND NON-IMMIGRANT HOUSEHOLDS

ABSTRACT

The objective of this paper is twofold, first to identify changes in the relationship between household resources and material hardship as affected by rule changes governing the eligibility criteria and benefit levels of social programs in the United States, and, second, to assess differences in extended family households' and non-extended households' ability to avoid material and financial hardship by household structure and across immigrant and nonimmigrant households. I use data from the Survey of Income and Program Participation, which includes comprehensive measures of material hardship in addition to measures of household finances. The analysis supports a number of conclusions. First, household resources, in the form of income and net worth, become more determinative of experiences of material hardship between the 1996 and 2004 panels of the SIPP, while household transfer income becomes less consequential for material hardship across panels. Second, extended family household structure is protective against some forms of material hardship in the 1996 panel, but not the 2004 panel while other household characteristics similarly have smaller effects on the likelihood of material hardship. These two facts indicate that household resources increase in importance, both absolutely and proportionally, between the two panels. With respect to financial hardship, extended family household structure is protective against both household income poverty and low household income across both panels, and immigrant extended family household structure offers additional protection against income poverty.

INTRODUCTION

Family life and family structure have changed dramatically in the later half of the 20th century in the United States. Research has largely focused on changes in family structure such as the rise in levels of divorce, nonmarital child bearing, and single-parent families, all of which occur disproportionately among disadvantaged groups (Cherlin 2010; Smock & Greenland 2010). Similarly, the decades-long decline in extended family coresidence reversed in the mid-1980s (Ruggles 2007), this reversal was especially marked among minority and immigrant groups, both of which experienced greater growth in extended family household co-residence (Grieco, et al. 2012; Ruggles 2007; Treas and Batalova 2001), and now reside in extended households at greater rates than do native-born whites (Cohn 2010).

A general argument proposes that extended family households are formed as a rational reaction to the economic need of family members (Goldscheider & Goldscheider 1999; Riley & Riley 1993; Speare & Avery 1993). A contrasting, and potentially complementary, argument specific to immigrants and subsequent immigrant generations proposes that extended family households are formed partly on the basis of individuals' economic need, but also largely on the basis of cultural values that assign primacy to the kin group and its needs (Angel & Tienda 1982; Blank 1998; Burr & Mutchler 1993; Kamo 2000). Indeed, each explanation appears valid on its face as the rise in extended family household formation corresponds to a period of increasing inequality in earnings and weakening labor force attachment, and of increasing international migration to the United States. These explanations raise a

question of whether differences in the motivations for household extension across immigrant and nonimmigrant households further affect differences in the likelihood across groups if nonimmigrants' motivations are more purely economic while immigrants' motivations are both economic and cultural.

Additional questions concerning the difference in experience of hardship across immigrant and nonimmigrant groups arises from the passage of the Personal Responsibility and Work Opportunity Act (PRWORA) by Congress in 1996 and its supplement implementation, which began unevenly across states in 1997. PRWORA affected many changes in the rules governing individuals' eligibility for social programs and the level of benefits available to them, notable among these changes were provisions that limited the total length of time that individuals could receive benefits, the imposition of work requirements on recipients, and the granting of more latitude to states in determining the level of benefits for which individuals and families are eligible. Additionally, the legislation includes provisions that resulted in many program benefits becoming unavailable to non-citizen immigrants and that implemented waiting periods after immigration before immigrants are eligible to receive program benefits. Additionally, states were charged with setting the conditions under which immigrants would be considered eligible for state and federal aid. These changes raise questions about how the importance of household resources for hardship changed over time with the change in social program rules that limited the amount of aid available to immigrant households, and raise additional questions about how differences in benefits across immigrants and nonimmigrants impact the

relationship between extended family household structure and hardship for each group.

To address these questions, I use data drawn from the 1996 and 2004 panels of the Survey of Income and Program Participation (SIPP) to assess differences in the likelihood of material and financial hardship across immigrant and nonimmigrant, and extended and non-extended households. I first assess differences in the importance of household resources for material hardship across the panels to evaluate whether restrictions on individuals' eligibility for social program benefits and change in the level of benefits available to individuals and families served to increase the importance of other household resources for material hardship. I next address the tension between the explanations for immigrant and nonimmigrant household extension, considering the impact of extended family household structure for financial and material hardship across extended and non-extended households, and across immigrant and nonimmigrant households. By focusing on financial hardship, it is possible to assess how successfully extended households avoid the financial need that is argued to underlie the decision to form extended households. Additionally, it is possible to determine whether immigrant and nonimmigrant households are differentially able to avoid financial hardship. I take advantage of the SIPP's uniquely comprehensive set of measures of material hardship to assess how successfully households avoid these nonfinancial forms of hardship, which are distinct from, but often considered alongside, financial hardship. While material hardship is commonly considered a consequence of financial hardship, it is a distinct set of experiences that is only moderately associated with income (Beverley, 2001; Boushey, et al., 2001;

Mayer, 1997; Rector, et al., 1999). Given that material hardship may arise from an absolute lack of resources, poor management of resources or a combination of these two factors, extended households may experience similar success in avoiding one form of hardship while differing in their experience of another if different decisions and behaviors concerning labor market participation and household management prevail in immigrant and nonimmigrant households.

Long-Term Trends in Extended Family Household Formation

The landscape of American families has changed dramatically in the last six decades. The most visible and researched examples of this change are the dramatic increases in the prevalence of single parent headed families, the incidence of divorce, nonmarital childbearing and cohabitation – all of which were previously quite rare (see Cherlin 2010, for example). A similarly striking change in family living arrangements took place in the later half of the 20th century as the share of the population living in extended family households – commonplace in the 19th century and previous centuries – declined dramatically between 1940 and 1980, before beginning a reversal in the 1980s (Cohn 2010; Ruggles 2007)¹.

Over the term of the 20th century, divorce rates increased, stabilizing at current levels in the late 1980s (Goldstein 1999), while in the later half of the 1900s and into the present non-marital families and cohabiting more generally have become more common and accepted (Bumpass & Lu 2010; Seltzer 2004). At the same time, those

¹ This is not to say that the decline in the nuclear family and rise of the extended family household are entirely independent phenomena, the circumstances often leading to and resulting from transitions away from the nuclear family form undoubtedly overlap with those economic concerns argued to underlie individual transitions into extended households.

individuals who are most likely to cohabit have fewer economic resources and receive less support from family members (Bines & Joyner 1999; Manning & Brown 2006), which compounds the likelihood that they will experience economic hardship if their – typically less stable – cohabiting relationship ends. The dramatic rise in nonmarital childbearing since 1960 also has implications for the formation of extended family households as nonmarital births are most common among less educated and lower income women (Rindfuss, Morgan & Offutt 1996), who face more financial hardship following the birth of a child by virtue of their economic position. Correspondingly, young adults who are unmarried, have low incomes or are parents are more likely to live in their parents' home, often forming extended family households (Treas & Batalova 2011), suggesting that other shifts in family and household composition have been consequential for the increase in extended family households.

The disproportionate likelihood that these young adults live in extended family households is likely affected by changes in the financial, employment, and relationship circumstances that they and their family members face. The formation of extended family households was, in part, facilitated by shifts in public policy that have helped older generations become more financially secure than they were at the beginning or middle of the 1900s (Treas & Torrecilha 1995). Additionally, changes in the economy have increased economic hardship and instability among younger generations as the share of well-paid, stable industrial jobs decreased and the share of low-paying, unstable service sector jobs increased (Kalleberg 2003). As a result of these trends, over the past few decades younger generations have become less financially secure and face a greater likelihood of employment-related financial shocks, while older

generations have become more secure with the support of government programs – putting them in a position to provide aid to children and family members if needed (Treas and Torrecilha 1995). These shifts and their timeline are consistent with the argument that extended households are formed in response to individuals' hardship, and with evidence that older generations most often host younger generations when extended family households are formed (Angel & Tienda, 1982; Callis, 1997; Choi 2003; Goldscheider & Goldscheider 1999; Riley & Riley 1993; Speare & Avery 1993). While the decline in extended households has reversed in recent decades, the characteristics of families that form such households and the circumstances surrounding their formation have also changed dramatically. While these characteristics have undoubtedly changed even further with the economic shifts stemming from the 2008 recession, this analysis is limited to the 1996 and 2004 panels of the SIPP in an effort to avoid any additional dynamic introduced by the recession as they may affect the relationships underlying the associations between immigration status, household structure, and financial and material hardship.

The Changing Character of Extended Family Households

Economic Need

Prior to the 20th century decline in extended family coresidence, extended family coresidence was more common among higher socioeconomic status families – as measured by the occupational status of the head of the household or the value of businesses, farms, or dwellings owned – which could bear the economic burden that accompanies the addition of persons to the household (Ruggles 1987). Moreover, as

extended family households were typically formed as an intermediary step in the process of passing the family business or farmstead from one generation to the next prior to the 1900s, extended family coresidence was most common among families that owned a business or farm that household members eventually inherited (Ruggles 2007). Today, extended family households are now more commonly formed among lower socioeconomic status families (Kamo 2000; Mutchler 1992; Speare & Avery 1993), and often in response to hardship on the part of joining members (Angel & Tienda, 1982; Goldscheider & Goldscheider 1999; Speare & Avery 1993; Lee 1997). For economically disadvantaged families, extended family co-residence is of increasing importance in securing the wellbeing of child and adult family members (Bengtson 2001).

Extended family co-residence follows the age trajectory of intergenerational transfers generally, wherein parents are more likely to transfer resources to children in their working age years and in inverse proportion to children's earnings. Extended family households are typically formed when younger generations move into households maintained by an older generation of family members (Eggebeen, Hoagan & Clogg 1993; Logan & Spitze, 1996; McGarry & Schoeni 1995; Silverstein & Bengtson 1997; Silverstein, Gans & Yang 2006; Silverstein, Parrot & Bengtson 1995; Swartz 2009). Qualitative research indicates that commonly an adult child will experience financial hardship or otherwise have difficulty living independently – often coinciding with appreciable change in life circumstances such as the loss of a job, birth of a child, or the end of a relationship – prompting them to rejoin the parental household as an adaptive strategy (Aquilino 1990; Bryson & Casper 1999; Pebley &

Rudkin 1999). Indeed, householders indicate that extended family households most often serve to meet the needs of adult children and their dependents rather than those of older generations (Ward & Spitze 2007; Sutor, Sechgrist & Pillemer 2007).

Public policy, particularly support for the retired population, has improved the financial security of older people (Treas & Torrecilha 1995), enabling older generations to host younger generations in periods of financial hardship while they, ideally, reestablish economic self-sufficiency. Extended family households serve this function as evidenced by the greater likelihood of transition out of extended family households in cases in which income is more uniformly distributed across generations, while coresidence is more enduring in households with an uneven distribution of resources (Glick & Van Hook 2011). Insofar as residential hosting is a form of assistance, the stability of extended family coresidence is consistent with the general pattern of intergenerational transfer as this form of assistance to younger generations is inversely related to their level of income (McGarry & Schoeni 1995), and is consistent with the broader notion that extended households are formed in reaction to or expectation of individuals' hardship or need.

Protection Against Hardship

Families – extended and otherwise – adjust their behavior to ensure adequate levels of household consumption. More than half a century ago, Mincer (1960) observed the tendency for household members' labor market participation to rise to supplement to householders' earnings when they fell below a level customary to the human capital possessed by the householder. Extended household forms also protect against

hardship as – in addition to having a greater number of members across whom to allocate labor market and household maintenance efforts – they serve to pool resources and benefit from economies of scale (Angel & Tienda 1982; Blank & Torrecilha 1998; Bryson & Casper 1999; Nelson 1988; Raley 1995; Swartz 2009). Additionally, the exchange typical within kin networks (Bryson & Casper 1999; Raley 1995) may be further facilitated as extended family households serve to concentrate family members under the same roof, potentially lowering the cost in accessing the kin network or providing some forms of support (e.g. child care). Given the economic gains and ability to exchange mutual support possible within extended family households, that they are commonly formed in response to economic need on the part of joining members, one expects that extended family household structure serves to limit future hardship.

Extended family households' ability to avoid financial hardship is suggested – and their formation in reaction to instances of hardship supported – by the greater prevalence of extended family households among minorities and single parent families (Kamo 2000; Mutchler 1992; Speare & Avery 1993), two groups at elevated risk of financial and material hardship (Lerman 1996; Lichter & Crowley 2004; Thomas & Sawhill 2002). Further, young adults, single mothers and elderly persons are the three groups most likely to be brought into extended family household, and when included in extended family households these three groups also have lower incidence of poverty and low income than do similar peers (Mutchler & Baker 2009; Rakesh & Cohn 2011). Family members' contributions in extended households are not strictly financial, however, nor are their impacts.

Mutual Support

Research on kin support typically highlights three forms of intergenerational support – financial, emotional and practical. Financial support is exemplified by the contribution of earnings and assets toward individuals’ needs, emotional support by the exchange of sympathies, advice and reassurance, and practical support by the performance of or assistance with necessary tasks such as child care and maintaining the household (Bengtson & Roberts 1991; Gordon et al 2004). Although all three forms are often present to some extent in intrafamilial relations, the potential to draw on all – potentially to a greater degree – is present in extended households. Typically the older members in extended family households provide practical support – in addition to direct support – to younger generations while younger members primarily make financial contributions to the household (Bayder & Brooks-Gunn 1998; Smith 2000). Selectively releasing some household members from domestic obligations, such as childcare, allows them to engage in paid labor, thereby increasing potential household earnings (Angel & Tienda, 1982). The value of practical intergenerational support exchanged within families is substantial: for example, the market value of child care provided annually by grandparents in the United States is estimated to be between \$17 billion and \$29 billion (Silverstein & Marengo 2001; Silverstein 2006). Considering the care provided and the labor market participation enabled by grandparent childcare arrangements alone, the potential financial benefit of extended family household formation is sizeable.

These non-financial forms of support have notable financial impacts in extended family households, as they are more likely to report income from all sources – aside from means-tested transfers – than are non-extended households (Mutchler & Baker 2009). This suggests that through the exchange of practical support, extended family households are able to more effectively allocate resource-generating and household maintenance efforts across more persons and domains, conferring advantages beyond the economies of scale that emerge with the addition of persons to the household.

Race, Ethnicity and Immigration, and Extended Family Co-residence

Between the 1940s and 1980 extended coresidence declined similarly across white and minority groups despite the greater prevalence of extended households among minority groups (Ruggles, 1994). All groups have also experienced an increase in the formation of extended family households since the 1980s, and the share of minority groups living in extended family households now approaches double that of the non-Hispanic white population (Cohn 2010). The prevalence of extended family households among minority groups may have further implications for household outcomes as the types of support exchanged by kin differ between whites and minority groups.

Families exchange a great deal of support internally, however the kinds and frequency of exchange vary across groups, often reflecting those forms of support that individuals are best able to offer. Minority families exchange less intergenerational financial support than do white families (Eggebeen 1992; Lee & Aytac 1998). In

contrast to white families, however, minority families more regularly provide practical forms of support –child care, household help, transportation and housing (Hogan et al. 1990, 1993; Kamo 2000; Sarkisian & Gerstel 2004; Sarkisian, et al. 2007). Similarly, differences in social class and marriage patterns across minority groups are associated with the prevalence of extended family households (Aquilino 1990; Crimmins & Ingegneri 1990; Sarkisian & Gerstel 2004). As the prevalence of extended household forms differs between minorities and whites, it also differs between immigrant and native-born populations.

Extended households are more common among immigrants than among the native born population, white or minority. Foreign born householders are about 50-percent more likely to head extended family households than are native born householders, and the share of foreign born people living in extended family households is twice that of native born people (Grieco, et al. 2010). In addition to living with aunts, uncles, cousins and more distant relatives at greater rates (Glick 1999; Glick, Bean & Van Hook 1997), immigrants are also more likely to live with non-relatives than are native born people (Leach 2014). As with the population more generally, socioeconomic status influences the formation of extended family households among immigrants with lower status immigrants forming proportionally more extended households (Glick 2009; Sarkisian et al 2007). The financial imperative for extended household formation clearly operates in the immigrant population as it does in the native born population, however, that immigrants are more likely to form extended family household after accounting for resources begs further

explanation. Cultural differences between immigrant and native born populations are commonly cited as a cause of this difference.

Cultural Explanation

Among the many accounts of the decline of the nuclear family form in the United States since mid-century, many include variants of the argument that the cultural value of familism has receded, contributing to the decline in the nuclear family as it has become progressively less valued (see Popenoe 1993, for example). A similar cultural argument is made to explain the greater prevalence of extended family households among immigrant groups. Variants of this argument propose that immigrant groups, by virtue of retaining origin-place norms, assign greater importance to the kin group and to supporting the kin group than do native-born populations (Burr & Mutchler 1999; Mindel 1980; Vega 1995). This explanation is proposed to underlie nativity differences in extended family coresidence as an elder care strategy (Burr & Mutchler 1992), the comparative stability of marriage among immigrants (Fussell & Palloni 2004) and, of greater importance to the present study, the greater prevalence of extended family households among immigrant groups and minority groups with sizeable shares of immigrants (Hawkins & Eggebeen 1991; Kamo 2000; Treas & Batalova 2001). At the core of this argument – hereafter referred to as the cultural explanation – is the assumption that immigrant groups retain cultural values more similar to their place of origin than to the culture of their new place of residence, that familism is included among these cultural values, and that the cultural values of the place of origin are only lost slowly over succeeding generations. These familist values

may weaken across generations, but persist at least through the second generation, where extended family coresidence among second generation immigrants approximates the rate of extended family coresidence among first generation immigrants (Pew 2013).

Despite the dominant preference of adults in the United States for independent living (Goldscheider & Goldscheider 1994), immigrants are – all else equal – more likely to live in extended family households (Kamo 2000). The patterning of romantic relationships across generations of immigrant families also offers support for differences in the valuation of family and the more gradual recession of these values as immigrants have more stable marriages than do native born people (Bulanda & Brown 2008), and subsequent generations - while more likely to cohabit and less likely to marry than previous generations – do not reach the greater rates of cohabitation, divorce or single-parent families observed among the nonimmigrant population (Brown, Van Hook & Glick 2008; Lansdale, Oropesa & Bradatan 2006). The impact of culture on family and household structure is suggested more broadly among Asian and Hispanic minority groups, both of which include sizeable shares of immigrants and second generation immigrants, and whose children reside with parents for longer periods of time than do children in other ethnic groups (Goldscheider & Goldscheider 1999). Similarly, cultural preferences may underlie Asian and Hispanic formation of extended family household in the home of middle generation members at higher rates than among whites and blacks (Kamo 2000), reflecting norms in the place of origin.

While explanations for the increase in extended family households across native-born and immigrant populations both include financial motivations (Aquilino 1990; Bengtson 2001; Bryson & Casper 1999; Pebley & Rudkin 1999), explanations for the disproportionate formation of extended family households among immigrants incorporate an additional dimension of cultural, familist motivations (Angel & Tienda 1982; Baca Zinn & Wells 2000; Blank 1998; Sarkisian, Gerena & Grestle 2007; Van Hook & Glick, 2007). Accordingly, these additional motivations result in immigrants greater likelihood of living in extended family households compared to native-born people with similar financial resources.

Changing Social Policy

In 1996, Congress passed the Personal Responsibility and Work Opportunity Act (PRWORA) to overhaul the rules governing the receipt of social program benefits. Two major rule changes were enacted governing the conditions under which an individual is eligible for Temporary Assistance for Needy Families (TANF) income. First, individuals may only receive federally funded TANF benefits for 60 months across their lifetime, and, second, individuals who receive TANF benefits are required to meet a minimum number of hours worked per week within two years of beginning to receive benefits. Additionally, PRWORA made states responsible to define the criteria under which individuals and families are eligible to receive benefits, and allowed states to determine how individuals' and families' level of support would be determined. PRWORA made noncitizen immigrants ineligible for federally funded social program benefits and implemented waiting periods after immigration before

immigrants become eligible for some programs. As with eligibility standards more generally, states were allowed to define the conditions under which immigrants are determined to be eligible for social program benefits.

As states adopted sanctions unevenly after PRWORA took effect in 1997, by the end of the period of observation used in this study, 12 states had still not adopted TANF time limits, while too little time had elapsed for the remaining 38 states' time limits to have been met. Accordingly, it is unlikely that the levels of benefits received by households in the 1996 panel is affected dramatically by PRWORA sanctions, while they are almost certainly affected in the 2004 panel. Concerning the effect of reform on immigrant households, after the implementation of PRWORA, all states chose to continue TANF benefits for legal permanent residents who immigrated prior to the law's enactment (Fremstad 2002). Accordingly, it is not likely that immigrant households' receipt of benefits was unevenly affected across states. Immigrant households' receipt of benefits may be somewhat reduced in the 1996 panel as recent immigrant households would not yet have become eligible for program benefits, it is likely a rather small number of households relative to all immigrant households in the sample.

Given the implementation of time limits, work requirements, and sanctions, the rate of benefit receipt declined markedly in the years following the enactment of welfare reform. While the rate of benefit receipt declined sharply for all households, the decline was even more marked for immigrant households (Department of Health and Human Services; Fix and Passel 2002), owing, in part to recently arrived immigrants' ineligibility for federally funded programs. As states were given latitude

to determine the eligibility criteria for program benefits and how families' benefit levels are determined, the maximum level of benefits available to households also decreased in the years following the implementation of welfare reform (author's calculations based on the Urban Institute's Welfare Rules Database). This points to a decline in both the prevalence and level of benefits among disadvantaged immigrant and nonimmigrant households between the 1996 and 2004 panels of the SIPP.

Expectations

Following the decrease in the share of households receiving social program benefits following the implementation of welfare reform, I expect that household resources will become more important in predicting households' experience of material hardship across the 1996 and 2004 samples. Given the greater decrease in the share of immigrant households receiving benefits relative to nonimmigrant households, greater restrictions on immigrant households' receipt of benefits, and general decline in the generosity of states' benefits, I expect that among immigrants household resources will increase in importance for household material hardship in excess of the increase expected for households more generally.

Valenzuela and Dornbush (1994) suggest that there are three components of familism: structural, attitudinal and behavioral. The structural manifestation of familism among immigrants is evidenced in the differential patterns of marriage, family and household structure discussed previously. Familist attitudes are argued to underlie these differences, but systematic differentiation in attitudes, particularly those related to familism, is difficult to assess (Sarkisian & Grestel 2004). However,

if immigrants are less culturally similar to the population of the receiving country - if they are less individualist and more collectivist (Pyke & Bengtson 1996), for example - their behavior within extended family households will also differ from that of the native-born population, affecting household experiences of hardship.

Given that studies of low income families find in-kind assistance from family and non-familial relations to be of great importance in meeting household and employment demands (Edin & Lein 1997; Henly, Danziger & Offer 2005; Henly & Lions 2000; Kisker & Ross 1997), and given that extended households bring family members and other kin relations under the same roof, they may serve to facilitate the exchange of in-kind assistance such that hardship is more successfully avoided. To the extent that the cultural values across immigrant and non-immigrant groups that affect differences in extended household formation similarly affect the provision of support or utilization of social networks within extended family households, I expect that the likelihood of hardship will differ between immigrant and non-immigrant extended households, with immigrants and especially immigrant extended households facing lower likelihoods of hardship by virtue of greater or more effective provision of mutual support within the kin group.

If extended households allow families to pool resources, share expenses, benefit from economies of scale, and allocate labor market activities, I expect that extended family household structure will predict lower likelihoods of financial hardship. Based upon the cultural explanation, I expect that immigrant extended family household structure will predict lower still likelihoods of financial hardship, by virtue of norms and behaviors that give primacy to the kin group's needs in addition.

Income is only one dimension of financial hardship and economic wellbeing, or lack thereof. In particular, although levels of household consumption are often inferred from income (Short, 2005), income does not necessarily capture the realized consumption of individuals and households. Experiences of material deprivation – sub-standard living conditions, or lack of material goods or services, for example – while conceptually linked to low income, are not captured particularly well by the income measures from which they are inferred (Sen 1979). Despite the close conceptual link between income and material circumstances, the association between income and material wellbeing is only moderate: sizeable shares of the non-poor experience material hardship and, conversely, sizeable shares of the poor do not (Beverly 2001; Boushey et al. 2001; Mayer 1997; Mayer & Jencks 1989; Rector et al. 1999). Conventional and alternative measures of poverty likewise fail to map neatly onto material hardship (Short 2005). Given the provision of financial and non-financial support within the kin group and within the household, the same processes that affect financial hardship likely play a role in preventing material hardship as well. Accordingly, I expect extended family household structure to predict lower likelihoods of material hardship and, given cultural differences in resource-sharing within extended household, immigrant extended family households to be predictive of still lower likelihoods of material hardship. Additionally, with the decreasing generosity of benefits and higher barriers to eligibility, I expect that extended family structure will become more important for households' avoidance of material hardship across panels.

DATA AND MEASURES

The data used for this study are drawn from the 1996 and 2004 panels of the Survey of Income and Program Participation. The SIPP is a nationally representative survey, initially covering about 43,500 households, that includes data on individual, family and household participation in social programs, and income and labor force participation. The analysis primarily uses data from the second wave of both panels, the seventh and eighth waves of the 1996 panels, and the fourth and fifth waves of the 2004 panel.

Household Structure

I construct an indicator of extended family household structure for all households using reports of household members' relationship to the householder. Extended family households are those in which household members report non-nuclear familial relationships to the householder. All other households are considered non-extended households.

Immigrant Household

I construct an indicator for all households that are headed by an individual who reports that they were born in a country other than the United States. For the purposes of this analysis, I consider these to be immigrant households². I expect that the cultural explanation for immigrant household extension is applicable as the inclusion of at

² Identifying immigrant households in this manner undoubtedly fails to capture some households headed by a married couple of mixed foreign-born status in which the spouse not identified as the head of the household is foreign-born.

least one foreign-born member suggests that some cultural values of the country of origin persists in the household and may persist across generations. Moreover, as the immigrant household indicator is based upon the household head's place of origin, decisions about household extension are likely disproportionately influenced by the household head by virtue of their position, thereby giving more influence to their values.

Outcome Measures

I construct two financial hardship indicators. The first indicates households with incomes that fall below the official poverty threshold. The second measure indicates households with income that is less than 150-percent of the official poverty threshold.

I construct four measures of material hardship. These measures are constructed from household reports collected in the Adult Wellbeing Topical Module, included during wave 8 of the 1996 SIPP and wave 5 of the 2004 SIPP. The first measure, food insufficiency, is an indicator for households that report that they either sometimes or often did not have enough food to eat at over the previous four month period. The second measure, bill paying hardship, indicates households that report that they were unable to pay the full amount of rent or utilities bills owed. The third measure, medical hardship, indicates households that reported that at least one household member was unable to receive medical or dental care in at least one instance in the previous 12 months. The final measure, housing hardship, indicates households in which the householder reports that the condition of their home is such that they would like to move. These four dimensions are frequently used to assess

material hardship (Heflin, Sandberg & Rafail 2009; Mayer & Jencks 1989; Rector, et al. 1999; Short 2005), a set of experiences that is distinct from financial hardship, but often conceived of alongside and co-incidental with low levels of income (Sen 1979; Slesnick 1994).

Analytic Plan

Following a discussion of the characteristics of the samples, I evaluate the relationship between household resources and material hardship across panels to assess change in the importance of resources for immigrant and nonimmigrant households across time, in response to change in the availability and generosity of social program benefits following from the implementation of welfare reform. Next, I consider whether extended family household structure serves to protect against material hardship, whether extended family household structure offers immigrant households additional protection against material hardship beyond that it offers to households more generally and how this protection changes across panels. Finally, I evaluate how extended family household structure affects the likelihood of financial hardship for all households, immigrant and nonimmigrant households, and whether this protective effect changes across panels.

RESULTS

Descriptive Analysis

Table 2.1 summarizes differences by household structure for all households of two or more persons for samples drawn from the 1996 and 2004 panels of the SIPP.

Extended family households have greater rates of poverty and low income than do non-extended households across both panels. Correspondingly, average monthly income among extended family households are much lower than among non-extended households. The share of extended family households reporting any form of material hardship is substantially larger than the share of non-extended households in both samples. Similarly, extended households are more likely to report any individual form of material hardship and report suffering a greater number of material hardships than do nonextended households. The net worth of extended family households is less than half that of non-extended households, while household transfer income is more than double that of non-extended households. Extended households are less well educated, more likely to include single parent families, and more likely to be headed by immigrants and minorities, speaking to the financial and cultural motives argued to underlie extended family household formation. Notably, in the 2004 panel, substantially more extended family households include members who did not graduate from high school than do non-extended households, as compared to the 1996 panel. Finally, despite including relatively similar shares of working aged members, working aged members in extended households work fewer hours than do non-extended households' members.

Table 2.2 presents descriptive statistics by immigrant headship for all households of two or more persons in the 1996 and 2004 samples. Consistent with prior research indicating that immigrants are more likely to live in extended family households, a greater share of immigrant households are extended in the 1996 sample,

Table 2.1. Descriptive Statistics by Household Extension and Panel

	1996 Panel			2004 Panel		
	All Households	Unextended Households	Extended Households	All Households	Unextended Households	Extended Households
Poor	0.10	0.10	0.14	0.10	0.10	0.14
Low Income	0.20	0.19	0.26	0.19	0.18	0.25
Any Hardship	0.27	0.26	0.35	0.24	0.23	0.31
Number of Hardships	0.32	0.31	0.41	0.30	0.28	0.41
Food Insufficiency	0.02	0.02	0.04	0.02	0.02	0.03
Bill Paying Hardship	0.14	0.14	0.17	0.13	0.12	0.18
Medical Hardship	0.11	0.11	0.12	0.11	0.11	0.15
Housing Hardship	0.05	0.05	0.08	0.04	0.04	0.05
Immigrant Headship	0.11	0.11	0.13	0.12	0.11	0.18
Income Monthly (HH of 4)	7150.7	7470.7	5250.9	7999.6	8290.3	5807.0
Net Worth (HH of 4)	227542.3	244893.5	114937.6	382463.8	407316.4	193995.4
Transfer Income Monthly (HH of 4)	55.6	45.7	114.1	66.1	57.1	133.8
Working Aged	0.64	0.64	0.64	0.68	.67	.70
Average Work Hours	28.4	29.1	24.2	24.2	24.5	22.2
Extended Family HH	0.14	0.00	1.00	0.12	0.00	01.00
Less Than HS	0.07	0.07	0.09	0.06	0.06	0.10
High School	0.27	0.25	0.34	0.19	0.18	0.22
Some College	0.35	0.35	0.37	0.40	0.40	0.43
College	0.31	0.33	0.20	0.35	0.34	0.25
Household Size	3.7	3.5	4.7	3.1	3.0	4.12
Single Parent HH	0.19	0.13	0.53	0.17	0.13	0.47
Black	0.14	0.11	0.30	0.12	0.11	0.23
Hispanic	0.1	0.09	0.17	0.09	0.08	0.15
Asian	0.01	0.01	0.02	0.03	0.03	0.04
N	19254	16479	2775	25219	22267	2952

Source: Survey of Income and Program Participation, 1996 & 2004 Panels.

and there are dramatically more extended family households among immigrants than among nonimmigrants in the 2004 sample. In the 1996 panel, immigrant households are only slightly disadvantaged relative to nonimmigrant households in terms of financial hardship, while in the 2004 sample, substantially more immigrant households experience income poverty or low household income. Immigrant households are more likely to report any material hardship than are nonimmigrant households, but report roughly the same number of hardships when any are reported. Immigrants report greater incidence of all forms of material hardship except for food insufficiency in the 1996 panel, and report less bill paying and medical hardship than nonimmigrant households in the 2004 panel. Some striking differences between immigrant and nonimmigrant households emerge between the 1996 and 2004 panels. Paralleling the incidence of financial hardship, immigrant households' incomes are fairly close to those of nonimmigrant households in 1996, but much lower than nonimmigrant household incomes in the 2004 panel. Immigrant households have lower net worth and greater transfer income than nonimmigrant households across panels. Immigrant and nonimmigrant households do not differ much on members' educational attainment in the 1996 sample, but immigrant households are much less well educated than are nonimmigrant households in the 2004 sample. The average size of nonimmigrant households become much smaller between panels, while immigrant households only shrink marginally. Immigrant and nonimmigrant households are headed by minorities at roughly comparable rates in the 1996 panel, while they are disproportionately headed by minorities in the 2004 panel, reflecting the origin of

Table 2.2. Descriptive Statistics by Immigrant Headship and Panel

	1996 Panel			2004 Panel		
	All Household s	Nonimmigrant Households	Immigrant Household s	All Households	Nonimmigrant Households	Immigrant Households
Poor	0.10	0.10	0.10	0.10	0.09	0.15
Low Income	0.20	0.20	0.20	0.19	0.18	0.27
Any Hardship	0.27	0.27	0.29	0.24	0.23	0.26
Number of Hardships	0.32	0.32	0.34	0.30	0.30	0.29
Food Insufficiency	0.02	0.02	0.02	0.02	0.02	0.03
Bill Paying Hardship	0.14	0.14	0.14	0.13	0.13	0.11
Medical Hardship	0.11	0.11	0.12	0.11	0.11	0.11
Housing Hardship	0.05	0.05	0.06	0.04	0.04	0.05
Immigrant Headship	0.11	0.00	1.00	0.12	0.00	1.00
Income Monthly (HH of 4)	7150.8	7415	7118	7999	8189	6594
Net Worth(HH of 4)	227543	301091	218484	382464	390005	325504
Transfer Income Monthly (HH of 4)	56	53	75	66	64	79
Working Aged	0.64	0.64	0.64	0.68	0.68	0.67
Average Work Hours	28.5	28.5	27.4	24	24.4	23.2
Extended Family HH	0.14	0.14	0.17	0.12	0.11	0.18
Less Than HS	0.07	0.07	0.07	0.06	0.05	0.17
High School	0.27	0.27	0.27	0.19	0.19	0.19
Some College	0.35	0.36	0.33	0.40	0.42	0.29
College	0.31	0.31	0.33	0.35	0.35	0.36
Household Size	3.70	3.70	3.8	3.15	3.08	3.6
Single Parent HH	0.19	0.19	0.21	0.17	0.17	0.16
Black	0.14	0.13	0.14	0.12	0.13	0.08
Hispanic	0.10	0.10	0.12	0.09	0.05	0.37
Asian	0.10	0.10	0.01	0.03	0.01	0.21
N	19254	17143	2111	25219	22230	2989

Source: Survey of Income and Program Participation, 1996 & 2004 Panels.

immigration flows to the United States. Immigrant and nonimmigrant households include relatively similar shares of working aged members who work similar hours weekly in both panels, however the share of working aged household members for both immigrant and nonimmigrant households increases between 1996 and 2004.

Table 2.3 summarizes differences by household structure across immigrant and nonimmigrant households in the two samples. While extended households have lower income than their non-extended counterparts in both samples, there are some interesting changes in the characteristics of households across panels. In the 1996 panel, among non-extended households, immigrant households have greater incidence of income poverty, while among extended households, immigrant have less incidence of income poverty. In contrast, in the 2004 panel immigrant households have greater incidence of poverty across both extended and non-extended households. Low income is comparable across immigrant and nonimmigrant extended households, and across immigrant and nonimmigrant non-extended households in the 1996 panel, but nonimmigrant non-extended households have a much lower incidence of low income in the 2004 panel consistent with the income advantage of nonimmigrant households relative to immigrant households and a financial motivation for the formation of extended family households. Interestingly, there is also some notable change in the incidence of material hardship across samples. The share of immigrant extended family households that report any material hardship and the average number of hardships that they report decreases dramatically between panels, while the share of other types of households that report any form of material hardship and the average number of hardships that they report change by comparably little. As noted

previously, the share of immigrant households headed by minorities increases greatly between panels for immigrant households.

Multivariate Analysis

I now turn to the questions of how resources affect the likelihood of material hardship across panels and how extended family household structure is related to material hardship for immigrant and nonimmigrant households. I first consider food insufficiency in the 1996 and 2004 panels, before proceeding to consider other forms of material hardship, bill paying hardship, medical hardship, and housing hardship. Following this, I consider how extended household structure affects the likelihood of financial hardship, examining household income poverty across the 1996 and 2004 panels before examining low household income across panels.

Food Insufficiency

1996 Panel

Table 2.4 Presents logit models predicting household food insufficiency in the 1996 and 2004 panels of the SIPP to assess change in the importance of household resources across immigrant and nonimmigrant households between panels. Consider first the 1996 panel, model 1 predicts household food insufficiency using household income, immigrant headship and household demographic characteristics. Household income is strongly related to food insufficiency in the first model such that, predictably, greater income protects households against food insufficiency. Additionally, the least educated households are more likely to experience food

Table 2.3. Descriptive Statistics by Household Extension, Immigrant Headship and Panel

	1996 Panel				2004 Panel			
	Non-extended Households		Extended Households		Non-extended Households		Extended Households	
	Nonimmigrant	Immigrant	Nonimmigrant	Immigrant	Nonimmigrant	Immigrant	Nonimmigrant	Immigrant
	Households	Households	Households	Households	Households	Households	Households	Households
Poor	0.10	0.10	0.14	0.10	0.09	0.15	0.14	0.14
Low Income	0.19	0.19	0.26	0.25	0.17	0.28	0.25	0.27
Any Hardship	0.26	0.27	0.34	0.36	0.22	0.25	0.32	0.29
Number	0.31	0.33	0.41	0.42	0.28	0.29	0.44	0.30
Hardships								
Food Sufficiency	0.02	0.02	0.04	0.02	0.02	0.03	0.04	0.02
Bill Paying	0.14	0.13	0.17	0.19	0.12	0.11	0.19	0.11
Hardship								
Medical Hardship	0.11	0.11	0.12	0.13	0.11	0.11	0.16	0.13
Housing	0.05	0.06	0.07	0.08	0.03	0.05	0.05	0.05
Hardship								
Monthly Income	7978	7410	5342	4629	8463	6899	5942	5196
Net Worth	339650	233562	118246	92414	412870	361767	201671	158879
Monthly	44	61	110	140	55	73	141	102
Transfer								
Income								
Working	0.64	0.65	0.64	0.60	0.68	0.66	0.70	0.71
Aged								
Average	29.2	28.5	24.3	22.2	24.7	23.1	21.9	23.8
Work Hours								
Less than	0.07	0.07	0.09	0.08	0.04	0.17	0.08	0.17
HS								
High School	0.26	0.24	0.33	0.45	0.18	0.18	0.22	0.23
Some	0.35	0.34	0.38	0.31	0.41	0.28	0.46	0.30
College								
College	0.32	0.36	0.21	0.17	0.37	0.37	0.24	0.29
Household	3.5	3.6	4.7	5.0	3.0	3.38	4.0	4.8

Size								
Single	0.14	0.13	0.52	0.59	0.13	0.11	0.49	0.37
Parent HH								
Black	0.11	0.11	0.30	0.29	0.11	0.08	0.26	0.11
Hispanic	0.09	0.09	0.16	0.22	0.05	0.35	0.09	0.45
N	14723	1756	2420	355	19813	2454	2417	535

Source: Survey of Income and Program Participation, 1996 & 2004 Panels.

insufficiency than are high school and better educated households. Black, Hispanic and single parent households are more likely to report food insufficiency. Notably, immigrant households do not meaningfully differ from all households in their likelihood of food insufficiency.

Model 2 includes, additionally, measures of household net worth and transfer income to assess the contribution of these household resources to the incidence of food insufficiency. Wealth is negatively associated with food insufficiency, while household transfer income is predictive of food insufficiency. Notably, the association between household income and food insufficiency becomes slightly smaller with the addition of net worth and transfer income measures, with each measure contributing equally to the decrease. The association between the least educated households and household food insufficiency becomes noticeably smaller with the inclusion of wealth and transfer income measures, primarily reflecting the impact of greater transfer income receipt among the least educated households. Finally, the associations between Hispanic and single parent households, and food insufficiency decrease in size with the inclusion of wealth and transfers measures, reflecting the negative impact of these households' relative lack of wealth and, for single parent households, the impact of receipt of greater levels of transfer income, both of which serve to increase the incidence of food insufficiency among Hispanic and single parent households.

To assess the different effects of income across immigrant and nonimmigrant households, model 3 incorporates interactions between the immigrant household indicator and the household resource measures. Immigrant households' net worth is somewhat negatively associated with household reports of food insufficiency, but

none of the measures are strongly associated with food insufficiency as is reinforced by the minimal impact that the inclusion of the immigrant-resource interactions has on the effects of general resource measures. The associations between other measures and household food insufficiency is little affected with the inclusion of these interaction terms, further indicating that resources affect immigrant and nonimmigrant households' likelihoods of food insufficiency in much the same way.

Next, model 4 incorporates an indicator of household extension to assess whether extended households are better able to avoid material hardship than are non-extended households. Contrary to expectations, extended family households are not meaningfully associated with household reports of food insufficiency and other measures' associations with reported food insufficiency are not affected. This suggests that, at least as concerning food insufficiency, household extension does not impact the likelihood of material hardship. Finally, the association between single parent households and food insufficiency becomes smaller with the inclusion of the households extension indicator, suggesting that, consistent with prior research, household extension offers single parent families some protection against hardship.

Considering the next question, whether immigrant extended households differ in their likelihood of material hardship relative to nonimmigrant extended households and non-extended households more generally, model 5 incorporates an indicator of immigrant extended household structure. Immigrant extended households are substantially less likely to report food insufficiency than are other households, supporting the expectation that immigrant extended households are better able to avoid material hardship than are nonimmigrant extended households. The association

Table 2.4. Logit Models Predicting Household Food Insufficiency

	1996 Panel						2004 Panel					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Income	0.905** (0.0105)	0.911** (0.0106)	0.912** (0.0114)	0.911** (0.0115)	0.912** (0.0115)	0.893** (0.0109)	0.894** (0.0100)	0.911** (0.0105)	0.911** (0.0114)	0.911** (0.0115)	0.911** (0.0115)	0.909** (0.0122)
Net Worth		0.995** (0.0016)	0.995** (0.0015)	0.995** (0.0015)	0.995** (0.0015)	0.994* (0.0027)		0.986** (0.0024)	0.987** (0.0025)	0.987** (0.0025)	0.987** (0.0025)	0.988** (0.0024)
Transfer Income		1.129** (0.0473)	1.118** (0.0483)	1.117* (0.0482)	1.116* (0.0482)	1.169** (0.0600)		1.042+ (0.0235)	1.046+ (0.0260)	1.045+ (0.0260)	1.046+ (0.0260)	1.040+ (0.0237)
Immigrant*Income			0.995 (0.0280)	0.995 (0.0282)	0.995 (0.0275)	1.000 (0.0292)			0.998 (0.0298)	0.998 (0.0298)	0.998 (0.0296)	0.994 (0.0296)
Immigrant*NW			0.991 (0.0055)	0.991 (0.0055)	0.991+ (0.0055)	0.994 (0.0058)			0.994 (0.0076)	0.994 (0.0076)	0.994 (0.0076)	0.994 (0.0077)
Immigrant*Transfers			1.115 (0.141)	1.117 (0.141)	1.136 (0.143)	1.153 (0.156)			0.947 (0.0990)	0.947 (0.0990)	0.946 (0.0989)	1.038 (0.101)
Extended Household				1.120 (0.163)	1.187 (0.173)	1.202 (0.178)				1.012 (0.149)	1.025 (0.153)	0.925 (0.146)
Immigrant*Extended					0.205* (0.157)	0.223+ (0.171)					0.847 (0.320)	0.837 (0.318)
Working Adults						1.689* (0.363)						1.799** (0.315)
Average Work Hours						1.016** (0.0033)						1.000 (0.0033)
Immigrant Headship	0.866 (0.161)	0.874 (0.162)	0.964 (0.274)	0.965 (0.275)	1.131 (0.315)	1.018 (0.292)	1.289 (0.210)	1.254 (0.204)	1.363 (0.370)	1.364 (0.370)	1.387 (0.386)	1.339 (0.373)
Less Than HS	2.068** (0.327)	1.987** (0.316)	1.996** (0.317)	2.006** (0.318)	1.986** (0.315)	2.145** (0.354)	1.091 (0.180)	1.095 (0.181)	1.087 (0.181)	1.087 (0.181)	1.085 (0.180)	1.145 (0.193)
Some College	1.220	1.212	1.219	1.223	1.219	1.170	0.949	0.978	0.979	0.979	0.979	0.956

	(0.166)	(0.167)	(0.168)	(0.168)	(0.168)	(0.163)	(0.119)	(0.124)	(0.124)	(0.124)	(0.124)	(0.123)
College	1.479	1.605	1.620	1.623	1.607	1.621	0.305**	0.367**	0.368**	0.368**	0.368**	0.358**
	(0.529)	(0.583)	(0.586)	(0.587)	(0.583)	(0.573)	(0.0683)	(0.0826)	(0.0829)	(0.0831)	(0.0831)	(0.0808)
Black	1.486**	1.415*	1.412*	1.399*	1.399*	1.399*	1.560**	1.330*	1.329*	1.329*	1.327*	1.309+
	(0.211)	(0.202)	(0.202)	(0.201)	(0.202)	(0.203)	(0.222)	(0.188)	(0.189)	(0.189)	(0.189)	(0.187)
Hispanic	1.750**	1.682**	1.678**	1.662**	1.668**	1.607**	0.900	0.804	0.798	0.798	0.798	0.790
	(0.286)	(0.272)	(0.272)	(0.268)	(0.268)	(0.258)	(0.162)	(0.142)	(0.143)	(0.143)	(0.143)	(0.140)
Asian	0.836	0.811	0.819	0.816	0.821	0.829	0.333*	0.307*	0.315*	0.315*	0.316*	0.261**
	(0.345)	(0.333)	(0.337)	(0.335)	(0.337)	(0.343)	(0.153)	(0.142)	(0.147)	(0.147)	(0.148)	(0.133)
Single Parent	1.919**	1.825**	1.813**	1.764**	1.780**	1.727**	1.254+	1.086	1.088	1.085	1.090	1.220
	(0.247)	(0.236)	(0.235)	(0.242)	(0.244)	(0.236)	(0.154)	(0.132)	(0.133)	(0.136)	(0.138)	(0.164)
Constant	0.079*	0.085**	0.085**	0.087**	0.086*	0.052**	0.0751**	0.0994**	0.0993**	0.0995**	0.098***	0.0632**
	(0.0268)	(0.0312)	(0.0305)	(0.0313)	(0.0310)	(0.0167)	(0.0192)	(0.0271)	(0.0274)	(0.0278)	(0.0276)	(0.0212)
N	17,893	17,893	17,893	17,893	17,893	16,929	24,214	24,214	24,214	24,214	24,214	22,076

Source: Survey of Income and Program Participation, 1996 & 2004 Panels

Note: Data are weighted. Coefficients presented as log odds, standard errors in parentheses. Models also include region, metropolitan residential status and household size. ** p<0.01, * p<0.05, + p<0.1

between immigrant household net worth and food insufficiency increases slightly with the inclusion of the immigrant extended household indicator, but does suggest that immigrant extended family households are better able to avoid food insufficiency by virtue of their resources. The relative stability of other measures' effects on the likelihood of food insufficiency suggests that factors other than these account for immigrant extended family households' ability to avoid hardship.

Finally, model 6 addresses the extent to which household composition and households' decisions about work activity affect their experience of food insufficiency by including measures of the share of household members who are of working age and the average number of hours worked by working aged household members. Both the inclusion of more working aged household members and more intense work activity on the part of household members are strongly predictive of food insufficiency. Notably, these differences in household composition and work intensity have very little effect on the association between immigrant extended household structure and reported food insufficiency, suggesting differences in composition and decisions about work effort allocation among immigrant extended households do not account for much of the protection they offer against food insufficiency. The association between least educated households and food insufficiency grows in size when household composition and work intensity are accounted for, indicating that the composition and work efforts of the least educated households decrease the amount of food insufficiency that they would otherwise face. At the same time, the model indicates that single parent and Hispanic households face more food insufficiency by virtue of their composition and work intensity.

2004 Panel

To assess change in the importance of household resources across panels, consider the second panel in Table 2.4, which presents logit models predicting reports of household food insufficiency for households in the 2004 panel of the SIPP. Model 1 suggests that household income is more strongly related to food insufficiency in the 2004 panel than in the 1996 panel. Additionally, while not strongly related, immigrant households are somewhat positively related to food insufficiency in the 2004 panel. While low levels of household education are strongly predictive of food insufficiency in the 1996 panel, high levels of household education are strongly negatively related to food insufficiency in the 2004 panel. Black households are more likely than white households to report food insufficiency across panels, while Hispanic households do not meaningfully differ in their likelihood of food insufficiency and Asian households are less likely to report food insufficiency. Finally, single parent households are more likely than other households to predict food insufficiency across both panels, but the association is much weaker and smaller in the 2004 panel.

Model 2 incorporates measures of household net worth and household transfer income to more thoroughly assess the relationship between household resources and food insufficiency in the 2004 panel. As in the 1996 panel, household wealth is negatively related to food sufficiency, while household transfer income is predictive of food insufficiency. Compared to the 1996 panel, the association between household net worth and food insufficiency is larger and much stronger, accounting for the difference in the association between household income and food insufficiency across

panels. The difference in the association between wealth and food insufficiency across panels offers support for the expectation that household resources become more consequential for households' experiences of material hardship over time. The association between transfer income and food insufficiency is smaller and weaker in the 2004 panel, suggesting that transfers are used less successfully to prevent food insufficiency. The association between black households and food insufficiency decreases sizably in size and strength when net worth and transfers are included, primarily reflecting the effect of lower levels of household wealth on the likelihood of hardship. Finally, single parent households are not meaningfully related to food insufficiency when net worth and transfers are accounted for, indicating that single parent households are at greater risk for food insufficiency by virtue of their lower levels of household wealth.

Interactions between immigrant household and the resource indicators are next included in model 3 to better assess change in the relationship between resources and material hardship for immigrants across the panels. The relationship between resources and food insufficiency does not meaningfully differ across immigrant and nonimmigrant households in the 2004 panel, while household wealth has an additional protective effect among immigrants in the 1996 panel. If anything, this offers evidence against the expectation that resources become more important for immigrant households across panels.

Next, model 4 includes an indicator of extended family household structure to assess differences in the experience of food insufficiency across extended and non-extended households. As in the 1996 panel, and contrary to expectations, extended

family households do not differ from other households in their experience of food insufficiency. Household extension, as it concerns food insufficiency, does not appear to affect the likelihood of this form of material hardship.

To assess whether food insufficiency differs across immigrant and nonimmigrant extended households in the 2004 panel, model 5 includes an indicator for immigrant extended family households. Immigrant extended family households do not differ from other households in their reports of food insufficiency. This contrasts sharply with immigrant extended family households in the 1996 model, which were substantially less likely to report food insufficiency than were other households. This stark contrast may result from the relative similarity between immigrant and nonimmigrant households and immigrant and nonimmigrant extended family households in the 1996 panel as compared to the more marked relative disadvantage of immigrant households and immigrant extended family households as compared to their nonimmigrant counterparts in the 2004 panel, particularly as it concerns the education of household members in the context of an economic period over which human capital is increasingly rewarded in the labor market.

Finally, model 6 incorporates measures of household composition and work intensity to assess the extent to which these factors affect the experience of food insufficiency across panels. As in the 1996 panel, the share of household members of working age is strongly predictive of reported food insufficiency while, unlike the 1996 panel, the average number of hours worked by household members is not meaningfully related to reports of food insufficiency. The predictive effect of household size is larger and stronger in the 2004 panel, indicating that despite the

positive effects of including more working aged members in a household, these benefits do not offset other negative impacts associated with the inclusion of more working aged members.

In summary, income is strongly negatively related to food insufficiency across panels with approximately the same effect size. Household net worth is strongly negatively associated with food insufficiency across panels as well, with a slightly larger effect in the 2004 panel. For immigrant households, net worth is slightly more protective against food insufficiency in the 1996 panel than it is in the 2004 panel, suggesting that, in conjunction with the change in the general net worth effect, that net worth became more consequential for both immigrant and nonimmigrant households between the 1996 and 2004 panels. Transfer income is predictive of food insufficiency in both panels, but has a smaller and weaker predictive effect in the 2004 panel, suggesting that while resources, generally, become more important for households' experience of food insufficiency between panels, transfer income becomes less consequential for households' food sufficiency. This raises a couple of possibilities. First, it may indicate that PRWORA reforms serve to more effectively target transfers to those households that were most in need or that would most benefit from transfer income. Second, this may simply reflect more constrained access to transfer income, or access to lower levels of program benefits such that the disadvantaged households that are likely to experience food insufficiency received either lower levels of, or no, benefits in the 2004 panel, whereas these households would have received, or received greater levels of, benefits in the 1996 panel. To the extent that income maintains a strong negative association with food insufficiency

across panels, and the protective effect of household net worth increases from one panel to the next, the expectation that household resources' importance for material hardship increases over time is supported. The weakening of the transfer income effect may be taken as evidence to the contrary, but is likely reflective of shifts in the distribution of transfer income across panels.

Extended family household structure is only protective against food insufficiency for immigrant households in the 1996 panel and extended family households do not differ from other households in the likelihood of food insufficiency in the second panel. This offers some support for the expectation that immigrant extended family households are better able to avoid material hardship than nonimmigrant extended family households, but also suggests that the importance of extended family households for avoiding material hardship decreases over time, at least as it concerns food insufficiency.

Bill Paying Hardship

1996 Panel

I next consider household difficulty in meeting financial obligations by predicting households' reports of difficulty paying their rent or utilities costs in full. Table 2.5 presents logit models predicting household bill paying hardship for the 1996 and 2004 panels of the SIPP. First, consider the 1996 panel. Model 1 predicts bill paying hardship using household income, household head's immigration status and other household characteristics. As with food insufficiency, household income has a strong negative association with bill paying hardship in the 1996 panel. Immigrant

households do not differ from nonimmigrant households in their likelihood of bill paying hardship. Black and Asian households are substantially more likely than white households to have difficulty paying bills, while Hispanic and white households do not differ meaningfully. Single parent households are more likely than other households to have difficulty paying bills, while households with college educated members are less likely than other households to report bill paying hardship.

Next, model 2 incorporates measures of household net worth and transfer income to further assess household resources' relationship to bill paying hardship. Transfer income is not meaningfully related to household reports of bill paying hardship, while net worth is strongly negatively related. The inclusion of these measures impacts the associations between black and Asian headed households and bill paying hardship, indicating that the lower levels of wealth among black and Asian households increase the incidence of bill paying hardship. At the same time, the association between college educated households and bill paying hardship grows smaller, indicating that the greater wealth of well-educated households reduces the incidence of bill paying hardship. Finally, lower levels of wealth among single parent households serve to increase their incidence of bill paying hardship.

To assess differences in the relationship between household resources and households' ability to meet financial obligations, model 3 includes immigrant-resource interaction terms. The immigrant-net worth interaction has a small but very strong positive association with bill paying hardship, indicating that wealth is less protective for immigrant households than it is for nonimmigrant households. Other measures'

association with bill paying hardship remain unchanged with the addition of immigrant resource measures.

Model 4 next includes an indicator for extended family household structure to examine whether extended household structure reduces the incidence of bill paying hardship as expected. Indeed, extended family household structure is strongly negatively associated with households' bill paying hardship, offering support for the expectations. The predictive effect of single parent households for bill paying hardship increases markedly, indicating that residence in extended family households serves to protect single parent families from greater incidence of bill paying hardship.

The expectation that immigrant extended family households differ from nonimmigrant extended family and other households in their experience of bill paying hardship is assessed in model 5 with the inclusion of an immigrant extended family household indicator. Immigrant extended family households are negatively associated with bill paying hardship in a manner similar to extended households more generally, but do not offer immigrants much additional protection against this form of material hardship.

Finally, model 6 incorporates measures of the share of household members of working age and the average number of hours worked by household members to capture the contribution of household composition and work intensity to households' experience of bill paying hardship. Both household composition and work intensity are strongly predictive of bill paying hardship. The association of household transfer income with bill paying hardship becomes much stronger with the inclusion of household composition and work intensity, suggesting that work efforts account for

Table 2.5. Logit Models Predicting Household Bill Paying Hardship

	1996 Panel						2004 Panel					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Income	0.940** (0.0045)	0.943** (0.0046)	0.944** (0.0049)	0.945** (0.0049)	0.945** (0.0049)	0.935** (0.0058)	0.929** (0.0044)	0.942** (0.00479)	0.943** (0.0049)	0.943** (0.0049)	0.943** (0.0050)	0.940*** (0.0056)
Net Worth		0.997** (0.0008)	0.996** (0.0009)	0.996** (0.0009)	0.996** (0.0009)	0.997** (0.0009)		0.990** (0.00098)	0.989** (0.0010)	0.990** (0.0010)	0.990** (0.0010)	0.991** (0.0010)
Transfer Income		1.042 (0.0339)	1.040 (0.0364)	1.049 (0.0363)	1.049 (0.0364)	1.071* (0.0357)		1.037* (0.0184)	1.042* (0.0204)	1.044* (0.0211)	1.044* (0.0210)	1.031+ (0.0186)
Immigrant*Income			0.994 (0.0110)	0.994 (0.0108)	0.993 (0.0108)	0.997 (0.0111)			0.982 (0.0147)	0.982 (0.0147)	0.982 (0.0146)	0.984 (0.0144)
Immigrant*NW			1.004** (0.0009)	1.004** (0.0009)	1.004** (0.0009)	1.003** (0.0009)			1.001 (0.0034)	1.001 (0.0034)	1.001 (0.0034)	1.001 (0.0033)
Immigrant*Transfers			1.019 (0.0924)	1.014 (0.0918)	1.022 (0.0935)	1.047 (0.0965)			0.965 (0.0658)	0.964 (0.0658)	0.963 (0.0652)	1.017 (0.0740)
Extended Household				0.666** (0.0544)	0.674** (0.0558)	0.703** (0.0585)			0.910 (0.0654)	0.929 (0.0672)	0.910 (0.0674)	
Immigrant*Extended					0.825 (0.179)	0.838 (0.180)				0.680+ (0.152)	0.683+ (0.153)	
Working Adults						1.316* (0.150)						1.236* (0.123)
Average Work Hours						1.010** (0.0017)						0.999 (0.0016)

Immigrant Headship	1.007 (0.0768)	1.010 (0.0771)	0.973 (0.141)	0.985 (0.142)	1.013 (0.150)	0.993 (0.150)	0.652** (0.0576)	0.633** (0.0558)	0.742+ (0.115)	0.740+ (0.114)	0.776 (0.120)	0.745+ (0.115)
Less Than HS	0.964 (0.0835)	0.952 (0.0829)	0.952 (0.0829)	0.930 (0.0817)	0.928 (0.0815)	1.018 (0.0924)	0.882 (0.0810)	0.878 (0.0806)	0.870 (0.0800)	0.871 (0.0802)	0.866 (0.0798)	0.902 (0.0863)
Some College	0.961 (0.0554)	0.963 (0.0556)	0.963 (0.0557)	0.953 (0.0553)	0.952 (0.0553)	0.914 (0.0531)	1.136* (0.0669)	1.159* (0.0685)	1.160* (0.0686)	1.158* (0.0685)	1.157* (0.0685)	1.109+ (0.0667)
College	0.567** (0.0603)	0.599** (0.0648)	0.599** (0.0648)	0.592** (0.0643)	0.591** (0.0643)	0.583** (0.0635)	0.527** (0.0425)	0.611** (0.0500)	0.613** (0.0502)	0.610** (0.0501)	0.610** (0.0501)	0.575** (0.0478)
Black	1.566** (0.107)	1.511** (0.104)	1.504** (0.103)	1.564** (0.109)	1.564** (0.109)	1.523** (0.105)	1.920** (0.124)	1.618** (0.104)	1.622** (0.104)	1.628** (0.105)	1.623** (0.105)	1.579** (0.103)
Hispanic	0.933 (0.0811)	0.904 (0.0784)	0.902 (0.0783)	0.934 (0.0813)	0.935 (0.0813)	0.891 (0.0774)	1.240* (0.107)	1.085 (0.0912)	1.077 (0.0912)	1.080 (0.0915)	1.079 (0.0914)	1.050 (0.0894)
Asian	1.401+ (0.274)	1.381+ (0.268)	1.378+ (0.267)	1.404+ (0.269)	1.402+ (0.269)	1.410+ (0.272)	0.610* (0.129)	0.562** (0.119)	0.571** (0.123)	0.575** (0.123)	0.578* (0.124)	0.592* (0.127)
Single Parent	1.463** (0.0874)	1.413** (0.0849)	1.408** (0.0847)	1.552** (0.101)	1.557** (0.101)	1.470** (0.0975)	1.834** (0.102)	1.591** (0.0894)	1.593** (0.0897)	1.624** (0.0951)	1.635** (0.0960)	1.635** (0.103)
Constant	0.294** (0.0410)	0.332** (0.0505)	0.338** (0.0517)	0.314** (0.0490)	0.313** (0.0489)	0.265** (0.0417)	0.382** (0.0438)	0.561** (0.0686)	0.556** (0.0686)	0.547** (0.0683)	0.541** (0.0678)	0.565** (0.0865)
N	17,893	17,893	17,893	17,893	17,893	16,929	24,214	24,214	24,214	24,214	24,214	22,076

Source: Survey of Income and Program Participation, 1996 & 2004 Panels

Note: Data are weighted. Coefficients presented as log odds, standard errors in parentheses. Models also include region, metropolitan residential status and household size. ** p<0.01, * p<0.05, + p<0.1

some of the variation underlying the relationship between household transfer income and bill paying hardship. Additionally, the association between extended family household structure and reported bill paying hardship decreases in size, indicating that household work intensity accounts for some of the protection that extended family households offer against bill paying hardship.

2004 Panel

The second panel in Table 2.5 presents logit models predicting bill paying hardship among households in the 2004 panel for comparison with the 1996 panel to assess change in the relationship between resources, household structure and immigration status, and hardship. Model 1 predicts bill paying hardship using household income, immigrant headship and household characteristics. As in the 1996 panel, household income is strongly negatively related to bill paying hardship, and has a larger predictive effect than in the 1996 panel, offering support for the expectation that household resources are of greater importance for hardship in the 2004 panel. Unlike the 1996 panel, immigrant headship is strongly related to bill paying hardship, having a sizably negative association. Households including members with some college education are more likely than high school educated households to report bill paying hardship, while, as in the 1996 panel, college educated households are substantially less likely to report bill paying hardship. Black households are more likely than white households to report bill paying hardship, even more than in the 1996 panel, while Hispanic households are similarly more likely to report bill paying hardship. Unlike the 1996 panel, Asian households are less likely than white households to report bill

paying hardship. Finally, single parent households are much more likely than other households to have difficulty paying bills, and are more likely than they are in the 1996 panel.

Next, measures of household net worth and household transfer income are included in model 2 to better capture household resources and their relationship with bill paying hardship. Household net worth and transfer income are both strongly related to bill paying hardship, net worth being negatively associated, while transfer income is positively associated with bill paying hardship. Wealth and transfer income also account for some of the association between household income and bill paying hardship, yielding a relationship between income and bill paying hardship that is comparable across 1996 and 2004 panels. Household net worth is more predictive of bill paying hardship in the 2004 panel than it is in the 1996 panel and transfer income is much more strongly related, both of which offer support for the expectation that resources are of greater consequence for hardship in the 2004 panel. Model 2 also indicates that household wealth reduces the incidence of bill paying hardship among households with members who completed some college or graduated from college. Conversely, black, Asian and single parent households experience greater incidence of bill paying hardship by virtue of their lack of net worth relative to white households while net worth accounts for the bulk of the difference in the experience of bill paying hardship across Hispanic and white households.

To assess differences in the relationship between resources and bill paying hardship across immigrant and nonimmigrant households, as well as the expectation that the importance of resources for immigrant households' experience of hardship

increases from the 1996 panel to the 2004 panel, model 3 includes interactions between the immigrant headship indicator and resource measures. Contrary to expectations, the immigrant resource interactions are not meaningfully related to households' bill paying hardship. The association between the immigrant headship indicator and bill paying hardship becomes noticeably smaller and less strong when the immigrant resource interactions are included, indicating that some of immigrant households' ability to avoid bill paying hardship is accounted for by their distribution of resources. This suggests rather limited support for the expectation.

The expectation that experiences of material hardship vary by household structure is considered in model 4 with the inclusion of the extended family household structure indicator. Extended family households are negatively related to bill paying hardship, but weakly, not offering a great deal of support for the expectation. The model does indicate that extended family households offer single parent families some additional protection against bill paying hardship, but this evidence is quite weak compared to the 1996 panel.

Next, model 5 incorporates an indicator for immigrant extended family households to capture additional variation in the experience of bill paying hardship across immigrant and nonimmigrant extended family households, and the expectation that immigrant extended family households better protect against material hardship than do nonimmigrant extended family households. Immigrant extended family households are associated with a lower likelihood of bill paying hardship, and account for a portion of the negative association between immigrant households generally and reported bill paying hardship, offering support for the expectation.

Finally, to assess how household composition and decisions about work efforts impact the experience of hardship across household structure, model 6 includes measures of the share of household members of working age and the average number of hours worked by household members. Household composition is consequential for experiences of bill paying hardship, with households that include more working aged members facing greater likelihoods of hardship. Differences in household work intensity are not meaningfully related to reported bill paying hardship in model 6. The association between immigrant extended family household and bill paying hardship is not affected with the addition of the measures, suggesting that household composition and decisions about work intensity do not account for the variation in hardship in immigrant extended family households relative to other households.

The analysis finds support for the expectation that household resources increase in importance for material hardship. While maintaining a strong association with bill paying hardship, the income effect becomes slightly larger and the effect of net worth becomes larger between panels. Immigrant net worth is predictive of bill paying hardship in the 1996 panel, essentially offsetting the protective general effect of net worth, and does not meaningfully differ from nonimmigrant net worth in the 2004 panel, suggesting that the importance of net worth increases for immigrant households between the panels, in line with the expectation that the importance of resources increases for immigrants especially between panels. At the same time, transfer income becomes more strongly predictive of bill paying hardship in the 2004 panel. It is worth considering, with respect to this shift in the effect of transfer income, that transfer income is very concentrated among a small and very

disadvantaged subsample, that otherwise resembles the bulk of households that report bill paying hardship.

Extended family household structure is protective against bill paying hardship in the 1996 panel, but not in the 2004 panel, while extended family household structure offers immigrant households no additional protection against bill paying hardship in the 1996 panel, but does offer some additional protection against bill paying hardship in the 2004 panel. This offers support for the expectation that family structure is consequential for material hardship. In both panels, extended family household structure is protective against bill paying hardship, in the first panel both immigrant and nonimmigrant households are similarly protected, while in the second panel extended family household structure is protective against bill paying hardship only among immigrant households.

Medical Hardship

1996 Panel

Table 2.6 presents models predicting household medical hardship, reports that at least one household member was unable to receive medical or dental services when they were needed at some point in the previous year, for the 1996 and 2004 panels of the SIPP. Considering first the 1996 panel, model 1 predicts medical hardship using household income, immigrant headship and household characteristics. Household income is negatively related to reports of medical hardship, as with other forms of material hardship previously addressed, while immigrant headship is not meaningfully related to medical hardship. Households that include college educated members have

substantially lower likelihoods of medical hardship, while households that include members who did not graduate from high school are somewhat more likely to report medical hardship. In contrast to food insufficiency and bill paying hardship, black and Asian households are less likely to report medical hardship than are white households, while Hispanic households do not differ from white households in their likelihood of medical hardship. Finally, single parent households are substantially more likely than other household to report medical hardship.

Household resources' impact on medical hardship is further accounted for in model 2 with the addition of measures of household net worth and household transfer income. Household net worth is negatively related to medical hardship, while household transfer income is predictive of medical hardship. The associations between black, Asian and single parent household, and medical hardship all decrease slightly with the addition of household net worth and transfer income, indicating that differences in net worth, and to a lesser extent, transfers account for some of the greater incidence of medical hardship among these groups.

To assess differences in the relationship between resources and hardship among immigrant and nonimmigrant households, model 3 includes immigrant household-resource interactions. The immigrant-net worth interaction is positively related to medical hardship, indicating that net worth is not as protective against medical hardship for immigrants as it is for nonimmigrants. Additionally, the association between single parent household and medical hardship grows when immigrant resource interactions are included, suggesting that immigrant single parent

families may more successfully use resources to avoid medical hardship than nonimmigrant single parent families.

Model 4 next includes an indicator for extended family household structure to assess whether medical hardship is less likely among extended family households as expected. Extended family household are strongly negatively related to reported medical hardship, offering support for the expectation that extended family households experience less material hardship. Changes in the associations between black, Asian and single parent household, and medical hardship indicate that extended family structure effectively helps black, Asian and single parent households avoid greater incidence of medical hardship.

Next, model 5 incorporates an indicator of immigrant extended family household structure to examine the expectation that immigrant extended family households are better able to avoid material hardship than are nonimmigrant extended family households. The model indicates that, indeed, immigrant extended family households are able to avoid medical hardship much better than nonimmigrant extended family households. This offers support for the expectation that extended family households offer immigrants protection against material hardship in addition to that protection offered by extended family household more generally.

Finally, model 6 incorporates measures of the share of household members of working age and the average number of hours worked by working aged household members to assess how the protection offered by extended households is influenced by household composition and work decisions. Households that include more working aged members are substantially more likely to report that a member was unable to

Table 2.6. Logit Models Predicting Household Medical Hardship

	1996						2004					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Income	0.949** (0.005)	0.952** (0.0051)	0.953** (0.0055)	0.954** (0.0055)	0.954** (0.0055)	0.944** (0.0064)	0.952** (0.0043)	0.960** (0.0047)	0.960** (0.0050)	0.959** (0.0050)	0.959** (0.0050)	0.959** (0.0055)
Net Worth		0.998** (0.0005)	0.998** (0.0006)	0.998** (0.0006)	0.998** (0.0006)	0.998** (0.0007)		0.995** (0.0006)	0.995** (0.0006)	0.995** (0.0006)	0.995** (0.0006)	0.995** (0.0006)
Transfer Income		1.092** (0.0371)	1.090* (0.0398)	1.094* (0.0397)	1.094* (0.0398)	1.088* (0.0387)		0.996 (0.0189)	1.016 (0.0193)	1.013 (0.0188)	1.013 (0.0188)	0.999 (0.0184)
Immigrant*Income			0.995 (0.0111)	0.994 (0.0109)	0.994 (0.0110)	0.997 (0.0112)			0.992 (0.0104)	0.991 (0.0105)	0.991 (0.0105)	0.993 (0.0107)
Immigrant*NW			1.002** (0.0006)	1.002** (0.0006)	1.002** (0.0006)	1.002** (0.0007)			1.001 (0.0025)	1.001 (0.0026)	1.001 (0.0026)	0.998 (0.0021)
Immigrant*Transfers			1.015 (0.0953)	1.013 (0.0946)	1.030 (0.0965)	1.065 (0.101)			0.701** (0.0913)	0.700** (0.0914)	0.698** (0.0930)	0.671** (0.0908)
Extended Household				0.783** (0.0669)	0.802* (0.0695)	0.772** (0.0686)				1.231** (0.0902)	1.209* (0.0909)	1.167* (0.0909)
Immigrant*Extended					0.631+ (0.159)	0.608* (0.152)					1.310 (0.248)	1.333 (0.255)
Working Adults						1.804** (0.176)						1.337** (0.115)
Average Work Hours						1.006** (0.0018)						0.997+ (0.0016)
Immigrant Headship	1.045	1.042	1.030	1.038	1.095	1.072	0.949	0.931	1.054	1.055	1.014	1.007

	(0.086)	(0.0862)	(0.163)	(0.164)	(0.176)	(0.176)	(0.0828)	(0.0814)	(0.144)	(0.146)	(0.144)	(0.141)
Less Than HS	1.153	1.129	1.128	1.114	1.110	1.211*	1.062	1.065	1.057	1.054	1.060	1.102
	(0.108)	(0.106)	(0.106)	(0.105)	(0.105)	(0.118)	(0.103)	(0.103)	(0.103)	(0.102)	(0.103)	(0.112)
Some College	0.995	1.000	0.999	0.993	0.992	0.939	1.130*	1.145*	1.147*	1.151*	1.151*	1.110
	(0.0627)	(0.0630)	(0.0630)	(0.0628)	(0.0627)	(0.0595)	(0.0702)	(0.0713)	(0.0714)	(0.0717)	(0.0718)	(0.0708)
College	0.547**	0.568**	0.571**	0.566**	0.565**	0.551**	0.630**	0.701**	0.704**	0.711**	0.711**	0.664**
	(0.0466)	(0.0484)	(0.0488)	(0.0484)	(0.0483)	(0.0477)	(0.0506)	(0.0566)	(0.0568)	(0.0574)	(0.0575)	(0.0550)
Black	0.766**	0.743**	0.739**	0.754**	0.754**	0.723**	0.884+	0.798**	0.793**	0.788**	0.790**	0.761**
	(0.0663)	(0.0648)	(0.0644)	(0.0661)	(0.0661)	(0.0635)	(0.0639)	(0.0575)	(0.0575)	(0.0571)	(0.0573)	(0.0559)
Hispanic	0.942	0.924	0.920	0.940	0.941	0.900	0.918	0.842*	0.832*	0.827*	0.829*	0.803*
	(0.0866)	(0.0846)	(0.0843)	(0.0862)	(0.0863)	(0.0831)	(0.0815)	(0.0737)	(0.0734)	(0.0730)	(0.0732)	(0.0723)
Asian	0.665+	0.653+	0.652+	0.659+	0.657+	0.672+	0.606**	0.579**	0.602**	0.594**	0.590**	0.588**
	(0.147)	(0.144)	(0.143)	(0.145)	(0.144)	(0.148)	(0.112)	(0.107)	(0.113)	(0.111)	(0.110)	(0.111)
Single Parent	1.200**	1.163*	1.158*	1.228**	1.236**	1.273**	1.262**	1.156*	1.157*	1.107	1.100	1.120+
	(0.0812)	(0.0787)	(0.0783)	(0.0862)	(0.0867)	(0.0909)	(0.0768)	(0.0707)	(0.0709)	(0.0707)	(0.0701)	(0.0759)
Constant	0.221**	0.229**	0.234**	0.226**	0.224**	0.152**	0.245**	0.325**	0.327**	0.336**	0.339**	0.329**
	(0.0300)	(0.0325)	(0.0337)	(0.0328)	(0.0325)	(0.0247)	(0.0301)	(0.0422)	(0.0428)	(0.0443)	(0.0447)	(0.0512)
N	17,893	17,893	17,893	17,893	17,893	16,929	24,214	24,214	24,214	24,214	24,214	22,076

Source: Survey of Income and Program Participation, 1996 & 2004 Panels

Note: Data are weighted. Coefficients presented as log odds, standard errors in parentheses. Models also include region, metropolitan residential status and household size.

** p<0.01, * p<0.05, + p<0.1

receive needed medical attention in the previous year, while the average number of hours worked per working aged household member is strongly predictive of a small increase in the likelihood of medical hardship. The inclusion of these measures indicates that household structure, particularly, and work efforts increase the likelihood of medical hardship among immigrant and nonimmigrant extended family households.

2004 Panel

The second panel in table 2.6 presents logit models predicting medical hardship among the 2004 panel of the SIPP for comparison against the 1996 panel and to assess how the relationship between resources and material hardship shifts for immigrant and nonimmigrant households across the panels. Model 1 predicts medical hardship using household income, immigrant headship and other household characteristics. As in the 1996 panel, income is negatively related to reports of household medical hardship while immigrant headship is not meaningfully related. Households that include members with some college education are more likely to report medical hardship than are other households, and households that include college educated members are substantially less likely to report medical hardship than are other households. As in the 1996 panel, black and Asian households are less likely than white households to report medical hardship, while Hispanic households do not differ from white households in their likelihood of medical hardship. As in the 1996 panel, single parent households are strongly predictive of medical hardship.

Model 2 includes measures of household net worth and household transfer income to more thoroughly account for the relationship between household resources and households' experiences of medical hardship. Like the 1996 panel, net worth is negatively related to medical hardship. Unlike the 1996 panel, household transfer income is not meaningfully related to household reports of medical hardship. The inclusion of these additional household resource measures indicates that households that include members with some college education or who have graduated from college avoid greater incidence of medical hardship by virtue of their possession of greater net worth. Similarly, black, Asian and single parent households experience greater incidence of medical hardship partially due to their lower levels of net worth.

Next, immigrant headship-resource interaction terms are included in model 3 to assess differences in the relationship between resources and material hardship for immigrant households relative to nonimmigrant households. For immigrant households, transfer income is negatively related to reports of medical hardship in the 2004 panel, while it is unrelated in the 1996 panel and transfer income is not meaningfully related to medical hardship for nonimmigrant households. Among other measures in the model, only small changes are observed for Hispanic and Asian households' association with medical hardship, suggesting that the distribution of resources provides some protection against medical hardship for Asian households while the distribution of resources slightly increases the incidence of medical hardship among Hispanic households. These two groups likely exhibit these small changes by virtue of the fact that they are composed of proportionately more immigrants than

black and white households, and thus are more affected by the inclusion of immigrant resource measures.

To assess the expectation that extended family household structure is associated with lower likelihood of material hardship, model 4 includes an indicator for all extended family households. Contrary to expectations, extended family household structure is strongly predictive of household medical hardship. The association between single parent family household and medical hardship becomes quite weak with the inclusion of extended family household structure, which suggests that single parent families that are part of extended family households have greater incidence of medical hardship than do single parent families living in non-extended households.

An indicator of immigrant extended family households structure is next included in model 5 to evaluate the expectation that immigrant extended households depart from nonimmigrant households in their ability to avoid material hardship. Immigrant extended family household structure is positively associated with medical hardship, but only rather weakly so. This, taken together with the decrease in the association between extended family household and medical hardship suggests that immigrant extended family households are less successful than nonimmigrant extended family households in avoiding medical hardship. Minimal change is observed in the relationship of other correlates to medical hardship.

Finally, model 6 includes the share of household members who are of working age and the average number of hours worked per working aged household member per week to assess the contribution of household composition and work decision to

households' ability to avoid medical hardship. Household composition is related to medical hardship as households with a greater share of working aged members are more likely to report medical hardship, and the intensity of household work efforts are negatively associated with the likelihood that households report medical hardship. In comparison to the 1996 panel, the association of household work intensity is reversed in direction, although it remains small in magnitude, while the strength of the household composition effect is stable, but its magnitude much less. Household composition and work effort explain some of the greater incidence of medical hardship among black and Hispanic households, as they do for black households in the 1996 panel.

In summary, the protection against medical hardship offered by household income decreases slightly from the 1996 panel to the 2004 panel, while the protection offered by household net worth increases slightly. The practical effect of these countervailing forces is quite marginal for the predicted probability of medical hardship for the typical household in either sample. The importance of household transfer income decreases between panels, as it does in the previous analyses predicting other material hardships. Taken together, there is little to suggest that the association between resources and medical hardship changes systematically between 1996 and 2004 panels.

Extended family household structure is strongly related to medical hardship in both the 1996 and 2004 panels, however the relationship changes dramatically. In the 1996 panel, extended family households are substantially less likely than non-extended households to report medical hardship, whereas in the 2004 panel extended

family households are comparably more likely to report medical hardship among household members. While differences in resources differ little between extended family household and non-extended family households in the 2004 panel, the difference in the share of poorly educated households increases substantially between panels. As health insurance is frequently included as a benefit of employment, less educated households may be less likely to be covered by insurance by virtue of their members' position in the labor market, driving the shift in the extended family household effect between panels.

Housing Hardship

1996 Panel

Next Table 2.7 presents logit models predicting the last measure of material hardship, housing hardship. Consider model 1, which predicts housing hardship using household income, immigrant headship and household characteristics. Household income is strongly and negatively related to reports of housing hardship, as it is with other forms of material hardship, and immigrant headship is predictive of housing hardship in the 1996 panel. The educational attainment of household members is also related to housing hardship, households with members who did not graduate from high school are substantially more likely to report housing hardship than are households with members who graduated from high school. Similarly, households with members who completed some postsecondary education are less likely to report housing hardship than high school educated households, while college educated households are even less likely to report housing hardship. Minority households, especially Asian

households, are substantially more likely than white households to report housing hardship. Finally, single parent households are much more likely than other households to report housing hardship.

To more thoroughly capture the relationship between resources and material hardship, model 2 includes measures of household net worth and total household transfer income. Households' net worth is strongly negatively related to housing hardship, while household transfer income is strongly predictive of housing hardship. The inclusion of these measures decreases the size of the association between the least well educated households and housing hardship, and the association between the best educated households and housing hardship, indicating that the greater transfer income among less educated households corresponds to a portion of their housing hardship and that the greater relative net worth of well-educated households results in some protection against housing hardship³. Additionally, lower levels of household net worth and greater transfer income account for a portion of the greater prevalence of dissatisfaction with housing among minority and single parent households, likely through constraints on the housing that these households are able to afford.

Model 3 includes immigrant-resource measure interactions to assess the relationship between resources and housing hardship among immigrant households relative to nonimmigrant households. Among the three measures, only immigrant net worth is strongly related to housing hardship, having a slight positive association, indicating that household net worth is less protective against housing hardship for immigrants than for nonimmigrants. At the same time the other immigrant resource

³ This is also reflection of the fact that better educated households are more likely to own their homes and that the value of homes account for a large share of well-educated households' net worth.

interactions are rather weakly related to housing hardship, suggesting that household income is more protective and transfer income less protective for immigrant households than for nonimmigrant households.

Next, the relationship between extended family household structure and housing hardship is assessed with the inclusion of an extended family household structure indicator in model 4. The indicator is negatively associated with housing hardship, offering support for the expectation that extended family household structure is protective against material hardship. There is little change in the associations between other measures and housing hardship, suggesting that for disadvantaged groups household structure is less protective against housing hardship relative to other material hardship.

To assess the difference in the association between extended household structure across immigrant and nonimmigrant households, model 5 incorporates an indicator of immigrant extended family household structure. Immigrant extended family household structure is not meaningfully related to household reports of dissatisfaction with housing, indicating that immigrant and nonimmigrant households benefit similarly from household extension, rather than immigrant households experiencing more benefits as predicted.

Finally, model 6 incorporates measures of the proportion of household members of working age and the average number of hours worked per working aged household member per week to assess the impact of differences in household composition and decisions about work intensity on the association between household structure and housing hardship. Neither measure is meaningfully related to housing

Table 2.7. Logit Models Predicting Housing Hardship

	1996 Panel						2004 Panel					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Income	0.979** (0.0064)	0.986* (0.0061)	0.988+ (0.0063)	0.989+ (0.0062)	0.989+ (0.0062)	0.991 (0.0066)	0.968** (0.0069)	0.979** (0.0072)	0.977** (0.0084)	0.977** (0.0082)	0.977** (0.0082)	0.981* (0.0085)
Net Worth		0.996** (0.0009)	0.996** (0.0011)	0.996** (0.0011)	0.996** (0.0011)	0.995** (0.0015)		0.995** (0.0011)	0.995** (0.0013)	0.995** (0.0013)	0.995** (0.0013)	0.995** (0.0014)
Transfer Income		1.212** (0.0415)	1.193** (0.0444)	1.198** (0.0443)	1.198** (0.0443)	1.173** (0.0469)		1.120** (0.0332)	1.111** (0.0329)	1.110** (0.0327)	1.110** (0.0326)	1.084** (0.0248)
Immigrant*Income			0.976 (0.0167)	0.976 (0.0164)	0.976 (0.0164)	0.973* (0.0158)			1.010 (0.0135)	1.010 (0.0135)	1.009 (0.0135)	1.008 (0.0129)
Immigrant*NW			1.004+ (0.0019)	1.004+ (0.0019)	1.004+ (0.0019)	1.005** (0.0017)			1.000 (0.0026)	1.000 (0.0026)	1.000 (0.0026)	1.001 (0.0027)
Immigrant*Transfers			1.135 (0.109)	1.133 (0.110)	1.141 (0.113)	1.203+ (0.126)			1.037 (0.0828)	1.037 (0.0827)	1.037 (0.0826)	1.076 (0.0979)
Extended Household				0.751* (0.0861)	0.767* (0.0883)	0.757* (0.0889)				1.019 (0.122)	1.032 (0.127)	1.039 (0.129)
Immigrant*Extended					0.753 (0.225)	0.769 (0.229)					0.856 (0.259)	0.878 (0.268)
Working Adults						1.020 (0.158)						1.020 (0.161)
Average Work Hours						0.997 (0.0025)						0.991** (0.0025)
Immigrant Headship	1.249* (0.137)	1.248* (0.138)	1.437+ (0.304)	1.449+ (0.302)	1.513+ (0.322)	1.522* (0.326)	1.172 (0.157)	1.171 (0.157)	1.027 (0.201)	1.027 (0.202)	1.049 (0.214)	1.058 (0.210)
Less Than HS	1.472**	1.395**	1.397**	1.364*	1.360*	1.351*	1.068	1.052	1.063	1.063	1.061	1.080

	(0.181)	(0.171)	(0.171)	(0.168)	(0.167)	(0.171)	(0.164)	(0.161)	(0.163)	(0.163)	(0.162)	(0.170)
Some College	0.839+	0.846+	0.846+	0.839+	0.838+	0.826*	0.932	0.939	0.938	0.938	0.938	0.938
	(0.0783)	(0.0794)	(0.0794)	(0.0790)	(0.0789)	(0.0783)	(0.0945)	(0.0957)	(0.0954)	(0.0956)	(0.0955)	(0.0978)
College	0.724**	0.777*	0.778*	0.770*	0.768*	0.762*	0.621**	0.686**	0.683**	0.683**	0.683**	0.649**
	(0.0879)	(0.0950)	(0.0950)	(0.0942)	(0.0939)	(0.0948)	(0.0814)	(0.0905)	(0.0897)	(0.0902)	(0.0901)	(0.0884)
Black	1.456**	1.361**	1.363**	1.397**	1.396**	1.360**	1.897**	1.703**	1.696**	1.695**	1.692**	1.596**
	(0.147)	(0.139)	(0.139)	(0.142)	(0.142)	(0.140)	(0.209)	(0.188)	(0.189)	(0.189)	(0.188)	(0.181)
Hispanic	1.518**	1.466**	1.467**	1.503**	1.504**	1.514**	1.678**	1.544**	1.554**	1.554**	1.553**	1.503**
	(0.196)	(0.188)	(0.189)	(0.193)	(0.193)	(0.195)	(0.220)	(0.201)	(0.201)	(0.201)	(0.201)	(0.196)
Asian	3.446**	3.347**	3.352**	3.386**	3.380**	3.460**	1.281	1.176	1.132	1.131	1.134	1.047
	(0.726)	(0.696)	(0.697)	(0.701)	(0.699)	(0.718)	(0.355)	(0.327)	(0.322)	(0.322)	(0.322)	(0.315)
Single Parent	1.813**	1.705**	1.700**	1.827**	1.836**	1.802**	1.503**	1.405**	1.399**	1.394**	1.399**	1.362**
	(0.156)	(0.147)	(0.146)	(0.166)	(0.168)	(0.167)	(0.146)	(0.136)	(0.137)	(0.144)	(0.144)	(0.147)
Constant	0.0377**	0.0390**	0.0383**	0.0365**	0.0361**	0.0417**	0.064**	0.070**	0.071**	0.071**	0.071**	0.093**
	(0.0072)	(0.0075)	(0.0075)	(0.0072)	(0.0072)	(0.0098)	(0.0138)	(0.0153)	(0.0161)	(0.0163)	(0.0162)	(0.0241)
N	17,893	17,893	17,893	17,893	17,893	16,929	24,214	24,214	24,214	24,214	24,214	22,076

Source: Survey of Income and Program Participation, 1996 & 2004 Panels

Note: Data are weighted. Coefficients presented as log odds, standard errors in parentheses. Models also include region, metropolitan residential status and household size. ** p<0.01, * p<0.05, + p<0.1

hardship. However, some change in the association between other measures and housing hardship is observed, suggesting that differences in household work intensity correspond to some of the housing hardship among minority and single parent households. Notably, the association between household income and housing hardship becomes weaker with the inclusion of household work intensity, likely by virtue of the correspondence between work hours and the generation of household income.

2004 Panel

Turning now to the second panel in Table 2.7, model 1 predicts housing hardship using household income, immigrant headship and household characteristics among households in the 2004 panel of the SIPP. Household income is strongly negatively associated with housing hardship, but has an even larger effect on the likelihood of housing hardship than it does in the 1996 panel, offering support for the expectation that household resources are more consequential for material hardship in the 2004 panel than they are in the 1996 panel. Unlike the 1996 panel, immigrant headship is not strongly associated with household reports of housing hardship. In the 2004 panel, only households with college educated members are strongly related to reports of housing hardship, being much less likely to express dissatisfaction with housing, the association is both larger and stronger than it is in the 1996 panel. Black and Hispanic households are both more strongly and sizably positively related to reports of housing hardship than they are in the 1996 panel, while single parent households remain strongly predictive, but the size of the association is somewhat smaller.

Model 2 includes additional measures of household resources to more thoroughly assess the relationship between resources and housing hardship. As in the 1996 panel, household net worth is strongly negatively related to housing hardship, while transfer income is strongly predictive of housing hardship. The size of the association between household income and housing hardship decreases slightly with the inclusion of these terms, reflecting the association between income, and net worth and transfers, but to rather limited effect. The association between college educated households and housing hardship decreases with the addition of the resource measures, indicating that the greater wealth of well-educated households offers some protection against housing hardship. The association between black, Hispanic and single parent households, and housing hardship decreases in model 2, indicating that the relative lack of wealth among black Hispanic and single parent households limits them to less satisfactory housing options.

To explore differences in the importance of resources for housing hardship across immigrant and nonimmigrant households, model 3 incorporates immigrant-resource interaction terms. None of the interactions are strongly related to reports of housing hardship and other measures' associations with housing hardship are unaffected, indicating that resources affect immigrant and nonimmigrant households' likelihood of housing hardship in much the same way.

Next, model 4 incorporates an indicator of extended family household structure to assess the expectation that extended family household structure serves to protect households against greater incidence of material hardship. Notably, extended family

household structure is not meaningfully related to household reports of housing hardship, in contrast to the negative association in the 1996 panel.

Model 5 assesses the further expectation that extended family household structure offers immigrant households additional protection, relative to nonimmigrant households, against material hardship by including an immigrant extended family household indicator. The indicator is not meaningfully related to reported housing hardship, indicating that extended family household structure offers little protection against housing hardship for either immigrant or nonimmigrant households in the 2004 panel.

Finally, model 6 includes measures of household composition and household work intensity to assess how differences in the share of working aged household members and the intensity of their work activity affect the incidence of housing hardship across households. In contrast to the 1996 panel, the average number of hours worked by working aged household members is strongly negatively related to housing hardship. Model 6 also indicates that for black and Hispanic households, and to a lesser extent single parent households, relatively lower levels of work intensity account for some of the housing hardship reported.

To summarize the above, household income is negatively associated with reports that householders are dissatisfied with the condition of their home across both panels, with the effect becoming stronger and larger from the 1996 to the 2004 panel. Household net worth is negatively associated with housing hardship across panels, and changes little over time. Household transfer income is predictive of housing hardship across panels and has a smaller effect on the likelihood of housing hardship in the

2004 panel. This is largely consistent with the other analyses predicting material hardship where the impact of resources on the likelihood of material hardship has increased or been maintained across panels while the influence of transfer income has, generally, decreased across panels. These changes are broadly consistent with the expectation that household resources become increasingly important over time. For immigrants, net worth is not meaningfully related to housing hardship in the 1996 panel, while immigrant and nonimmigrant households are similarly affected by net worth in the 2004 panel, indicating that the importance of net worth for immigrants households' experience of housing hardship increases across panels.

Extended family household structure is protective against housing hardship in the 1996 panel, but not in the 2004 panel, and extended family household structure offers immigrant households no additional protection against housing hardship in either panel. Again, this offers rather limited support for the expectation that extended family household structure protects households against material hardship, and no support for the expectation that immigrant extended family households are better able to avoid material hardship than nonimmigrant extended family households.

Financial Hardship

The second set of analyses considers the impact of extended family household structure on the experience of financial hardship across immigrant and nonimmigrant households in the 1996 and 2004 panels of the SIPP. Household structure's relationship to income poverty is first assessed before the relationship between household structure and near-poverty income is analyzed.

Income Poverty

1996 Panel

Table 2.8 presents logit models predicting income poverty among households in the 1996 and 2004 panels of the SIPP. First, consider the 1996 panel. Model 1 predicts income poverty, defined as household income falling below the official poverty threshold, for households using immigrant headship and other household characteristics. Immigrant headship is not meaningfully related to household income poverty, while other household characteristics are quite consequential for household income. The educational attainment of household members is very strongly related to household income poverty, households with members who did not graduate from high school are substantially more likely to be income poor than are households that include high school graduates and better educated households. Households including members who received some postsecondary education are less likely than high school educated households to be income poor, households including college graduates are even less likely to be income poor. Black, Hispanic and Asian headed households are all substantially more likely than white headed households to be income poor. Single parent households quite substantially more likely to be income poor than are other households. These associations are all consistent with the lower wages of less educated persons and the distribution of education across race/ethnicity groups, and across single and married parent households.

To examine the relationship between household structure and financial hardship, model 2 includes an indicator for extended family household structure.

Extended family households are very strongly negatively related to household income poverty, offering support for the expectation that extended household structure serves to protect households against hardship. The inclusion of extended family household structure increases the association between single parent household and income poverty, indicating that extended family households offer single parent families sizably protection against income poverty. Similarly, smaller increases are seen in the associations between black and Hispanic households, and income poverty, indicating that household extension offers these groups additional protection against income poverty as well. Both of these observations are consistent with prior research that suggests household extension is used by minority and single parent households to protect against more marked hardship.

Difference in the relationship between household structure for immigrant and nonimmigrant families is next assessed in model 3 with the addition of an indicator for immigrant extended family households. As with extended family households generally, immigrant extended family households are strongly negatively related to income poverty, indicating that extended family household structure offers more protection against financial hardship for immigrants than it does nonimmigrant households. Notably, the association between immigrant extended family household and income poverty does not change markedly, suggesting the relative independence of both immigrant and nonimmigrant extended households' protective effects.

Model 4 next incorporates a measure of the share of household members of working age to assess how household composition influences the relationship between household structure and financial hardship. Household composition is strongly related

to the likelihood of household income poverty, households that include more working aged members are less likely to be income poor. The inclusion of household structure decreases the size of the association between extended family structure and income poverty for both immigrant and nonimmigrant households, indicating that household capacity to engaged in paid labor accounts for a portion of the protection against income poverty offered by extended family household structure. The size of the association between the least educated households and single parent households, and income poverty decreases with the inclusion of household composition, indicating that the inclusion of fewer working-aged members and more young and old members results in greater incidence of income poverty among less educated and single parent households.

Finally, model 5 includes a measure of the average number of hours worked weekly by working aged household members to assess how household work decisions additionally influence the likelihood of income poverty among households. Household work intensity is strongly negatively related to the likelihood of income poverty across households. Notably, the association between household composition and income poverty becomes larger and stronger with the addition of household work intensity, indicating that net of work intensity, household composition is more consequential for financial hardship than it initially appears in model 4. The association between extended family household and income poverty becomes greater, suggesting that less intense work activity among extended family households increases the incidence of financial hardship. In contrast, the association between immigrant extended family household and income poverty becomes smaller with the inclusion of

Table 2.8. Logit Models Predicting Household Income Poverty

	1996 Panel					2004 Panel				
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 1	Model 2	Model 3	Model 4	Model 5
Extended Family Household		0.453** (0.0390)	0.471** (0.0409)	0.506** (0.0438)	0.403** (0.0404)		0.481** (0.0410)	0.503** (0.0428)	0.501** (0.0430)	0.462** (0.0426)
Immigrant*Extended Family			0.503** (0.124)	0.519** (0.127)	0.542* (0.139)			0.571* (0.125)	0.570* (0.125)	0.634* (0.147)
Working Aged Adults				0.632** (0.0648)	0.381** (0.0612)				1.023 (0.0820)	0.862 (0.114)
Average Hours Worked					0.944** (0.00211)					0.947** (0.00177)
Immigrant Headship	1.005 (0.0874)	1.032 (0.0889)	1.390 (0.104)	1.130 (0.104)	1.101 (0.109)	1.081 (0.0946)	1.094 (0.0958)	1.167+ (0.105)	1.166+ (0.105)	1.204* (0.113)
Less Than High School	2.627** (0.208)	2.535** (0.203)	2.516** (0.202)	2.435** (0.197)	1.870** (0.172)	2.163** (0.181)	2.170** (0.182)	2.149** (0.181)	2.153** (0.182)	1.768** (0.169)
Some College	0.509** (0.0339)	0.502** (0.0335)	0.500** (0.0334)	0.514** (0.0344)	0.548** (0.0389)	0.559** (0.0351)	0.551** (0.0348)	0.550** (0.0347)	0.549** (0.0348)	0.565** (0.0387)
College	0.311** (0.0272)	0.311** (0.0271)	0.309** (0.0270)	0.318** (0.0279)	0.337** (0.0310)	0.300** (0.0239)	0.295** (0.0237)	0.295** (0.0237)	0.294** (0.0237)	0.315** (0.0266)
Black	2.208*** (0.149)	2.345*** (0.160)	2.338*** (0.159)	2.338*** (0.160)	2.268*** (0.173)	2.021*** (0.134)	2.045*** (0.137)	2.029*** (0.136)	2.028*** (0.135)	2.083*** (0.155)
Hispanic	1.657*** (0.147)	1.745*** (0.155)	1.741*** (0.156)	1.770*** (0.158)	1.894*** (0.181)	1.536*** (0.134)	1.551*** (0.135)	1.544*** (0.134)	1.543*** (0.134)	1.655*** (0.149)
Asian	1.876*** (0.401)	1.893*** (0.410)	1.887*** (0.407)	1.847*** (0.397)	1.512* (0.344)	1.737*** (0.276)	1.812*** (0.285)	1.813*** (0.284)	1.814*** (0.284)	1.578*** (0.269)
Single Parent	3.271*** (0.195)	3.965*** (0.249)	4.003*** (0.252)	3.751*** (0.235)	3.845*** (0.279)	3.710*** (0.207)	4.333*** (0.253)	4.380*** (0.257)	4.399*** (0.262)	4.490*** (0.320)
Constant	0.0724** (0.00720)	0.0653** (0.00671)	0.0645** (0.00664)	0.0917** (0.0110)	0.552** (0.0944)	0.0760** (0.00763)	0.0679** (0.00701)	0.0670** (0.00691)	0.0657** (0.00749)	0.205** (0.0329)
N	19,254	19,254	19,254	19,254	18,258	25,219	25,219	25,219	25,219	23,019

Source: Survey of Income and Program Participation, 1996 & 2004 Panels

Note: Data are weighted. Coefficients presented as log odds, standard errors in parentheses. Models also include region, metropolitan residential status and household size. ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$

household work intensity, indicating that more intense work activity on the part of immigrant households results in some additional protection against financial hardship. Similarly, less intense work activity in less educated, and black households accounts for some of their greater likelihood of income poverty, while more intense work activity protects Hispanic and single parent households from greater likelihood of income poverty.

2004 Panel

Turning now to the second panel of Table 2.8, model 1 predicts income poverty for households in the 2004 panel of the SIPP using household characteristics. Household members' education is consequential for the likelihood of income poverty as in the 1996 panel as less educated households are more likely to be income poor, while progressively better educated households are less likely to be income poor. Notably, the predictive effect of the least educated households is smaller in the 2004 panel than it is in the 1996 panel, and the protective effect of households including members with some postsecondary education is also smaller. Single parent households are again substantially more likely to be income poor in the 2004 panel than are other households and are even more likely than single parent households in the 1996 panel. Finally, minority headed households are more likely than white headed households to be income poor, but the associations are slightly smaller than they are for minority households in the 1996 panel.

Model 2 incorporates an indicator for extended family household structure to assess the expectation that extended family households are protective against financial

hardship. As in the 1996 panel, extended family households are strongly negatively associated with income poverty. The association between single parent households and income poverty increases from model 1 to model 2, indicating that extended family household structure protects single parent families against greater likelihood of income poverty. Similarly, Asian and Hispanic households' association with income poverty increases, indicating that extended family household structure also offers Asian and Hispanic families additional protection against financial hardship.

To assess the expectation that immigrant extended family households more successfully avoid financial hardship than nonimmigrant extended family households, model 3 includes an indicator for immigrant extended family household structure. As in the 1996 panel, immigrant extended family household are negatively associated with income poverty, offering support for the expectation. Notably, the immigrant household indicator becomes more strongly associated with income poverty when immigrant extended family household structure is included in the model, indicating that among immigrants extended family households offer protection against financial hardship relative to other immigrant living arrangements.

Household composition is included in model 4 to assess how households' capacity to engage in paid labor affects the likelihood of income poverty across household types. Unlike the 1996 panel, the share of a household's members that are of working age is not consequentially related to households' experiences of income poverty and its inclusion has no impact on other measures in the model. Next, model 5 includes the average number of hours worked by working aged household members per week to capture the effect of household decisions about work intensity on the

relationship between household structure and the likelihood of financial hardship. As in the 1996 panel, households' work intensity is strongly negatively related to the likelihood of income poverty, indicating that households with members who engage more intensely in paid labor have lower likelihoods of poverty. The inclusion of household work intensity increases the size of the association between extended family household structure and income poverty, indicating that less intense work activity on the part of extended family household members serves to increase the incidence of poverty. In contrast, the association between immigrant extended family household and income poverty increases, indicating that more intense work efforts among immigrant extended family households serve to decrease the incidence of income poverty. The size of the associations between the least educated and Asian households, and income poverty decreases in model 5, suggesting that less intense work activity results in greater likelihoods of income poverty among these households. In contrast, the associations between single parent and Hispanic households, and income poverty increases, suggesting that single parent and Hispanic households experience less income poverty by virtue of more intense work efforts.

To review the above, across both panels, extended family households are substantially less likely to be income poor, offering support for the expectation that extended family households allow members to better avoid financial hardship. Additionally, immigrant extended households are further less likely to experience income poverty, supporting the expectation that immigrant extended family households are better able to avoid financial hardship than nonimmigrant extended family households. While household composition and work effort explain some of the

experience of poverty by extended family households and some of the avoidance of poverty by immigrant extended family households, they do not explain away the protective effect of extended family household structure.

Low Income

1996 Panel

Lastly, Table 2.9 presents logit models predicting low household income, income falling below 150% of the poverty threshold, for households in the 1996 and 2004 panels of the SIPP. Considering, first, the 1996 panel, model 1 predicts low household income using household demographic characteristics. As with income poverty, households with the least educated members are substantially more likely to have low income, while households with better educated members are progressively less likely to have low income. Minority headed and single parent households are also strongly associated with low household income relative to white headed households and households that do not include single parent families.

To assess the relationship between extended family structure and low household income, model 2 includes an indicator for extended family households. Extended family households are negatively related to low household income, as they are to household income poverty, supporting the expectation that extended family households are better able to avoid financial hardship. With the inclusion of extended family households, the association between single parent household and low income increases, indicating that extended household structure serves to protect single parent families against greater incidence of low income. Similarly, model 2 indicates that

minority households are protected against greater incidence of low household income by extended family household structure. Finally, the model indicates that the least educated households are also protected against greater likelihood of low income by extended household structure. The shift in the associations between adjustment measures and low income support the expectation that disadvantaged households use household extension as a means to prevent greater hardship.

Next, an indicator for immigrant extended family households is included in model 3 to evaluate the expectation that immigrant extended households are able to more successfully avoid hardship than are nonimmigrant extended family households. Immigrant extended family households are negatively related to low household income. Additionally, the association between immigrant headship and low household income is strengthened with the inclusion of immigrant extended family household, suggesting that extended family households offer immigrants protection against low income relative to other household structures.

Model 4 includes a measure of the share of household members that are of working age to capture the influence of household composition on the relationship between household structure and financial hardship. The model indicates that households that include more working aged members are less likely to have low income. Additionally, change in the association between extended household structure for both immigrants and extended households generally suggests that the inclusion of more working aged household members prevents greater incidence of low income among extended family households and particularly immigrant extended family households. Model 4 indicates that the inclusion of fewer working aged

Table 2.9. Logit Models Predicting Low Household Income

	1996 Panel					2004 Panel				
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 1	Model 2	Model 3	Model 4	Model 5
Extended Household		0.494** (0.0346)	0.510** (0.0362)	0.574** (0.0406)	0.497** (0.0399)		0.495** (0.0348)	0.519** (0.0365)	0.544** (0.0383)	0.497** (0.0378)
Immigrant*Extended			0.554** (0.108)	0.584** (0.113)	0.585** (0.118)			0.544** (0.0948)	0.561** (0.0975)	0.618** (0.109)
Working Adults				0.447** (0.0366)	0.236** (0.0293)				0.737** (0.0465)	0.553** (0.0589)
Average Work Hours					0.954** (0.00161)					0.953** (0.00138)
Immigrant Headship	0.997 (0.0701)	1.015 (0.0709)	1.100 (0.0815)	1.089 (0.0830)	1.074 (0.0873)	1.193* (0.0840)	1.210** (0.0852)	1.294** (0.0934)	1.301** (0.0936)	1.336** (0.103)
Less than HS	3.200** (0.221)	3.128** (0.219)	3.117** (0.219)	2.938** (0.210)	2.387** (0.195)	2.774** (0.207)	2.801** (0.210)	2.774** (0.207)	2.693** (0.201)	2.304** (0.196)
Some College	0.538** (0.0270)	0.529** (0.0267)	0.528** (0.0266)	0.552** (0.0280)	0.572** (0.0308)	0.568** (0.0285)	0.559** (0.0282)	0.558** (0.0281)	0.568** (0.0287)	0.575** (0.0320)
College	0.233** (0.0157)	0.231** (0.0156)	0.231** (0.0155)	0.242** (0.0163)	0.233** (0.0166)	0.236** (0.0151)	0.231** (0.0148)	0.231** (0.0148)	0.235** (0.0151)	0.238** (0.0165)
Black	1.922** (0.110)	2.036** (0.118)	2.034** (0.118)	2.055** (0.120)	1.895** (0.120)	2.063** (0.113)	2.104** (0.116)	2.088** (0.115)	2.108** (0.116)	2.203** (0.136)
Hispanic	1.576** (0.112)	1.669** (0.119)	1.667** (0.119)	1.727** (0.123)	1.801** (0.139)	1.610** (0.116)	1.629** (0.117)	1.619** (0.116)	1.638** (0.117)	1.805** (0.138)
Asian	1.682** (0.313)	1.706** (0.327)	1.697** (0.324)	1.647** (0.312)	1.430+ (0.288)	1.686** (0.206)	1.748** (0.213)	1.752** (0.213)	1.754** (0.213)	1.502** (0.201)
Single Parent	2.661** (0.131)	3.186** (0.169)	3.218** (0.171)	2.891** (0.154)	3.000** (0.179)	3.219** (0.153)	3.750** (0.187)	3.786** (0.190)	3.575** (0.182)	3.795** (0.231)
Constant	0.148**	0.137**	0.136**	0.253**	1.597**	0.153**	0.140**	0.138**	0.176**	0.614**

	(0.0121)	(0.0115)	(0.0114)	(0.0258)	(0.228)	(0.0126)	(0.0117)	(0.0115)	(0.0162)	(0.0833)
N	19,254	19,254	19,254	19,254	18,258	25,219	25,219	25,219	25,219	23,019

Source: Survey of Income and Program Participation, 1996 & 2004 Panels. Note: Data are weighted. Coefficients presented as log odds, standard errors in parentheses. Models also include region, metropolitan residential status and household size. ** p<0.01, * p<0.05, + p<0.1

members and more young and old members increases the incidence of low household income among single parent, Asian, and poorly educated households, while the inclusion of more working aged members decreases the incidence of financial hardship among Hispanic households.

Finally, model 5 includes the average number of hours worked per week by working aged household members to assess the contribution of household work intensity to the relationship between household structure and financial hardship. Household work intensity is strongly negatively related to financial hardship, households whose members engage more intensely in paid labor are less likely to have low income. The inclusion of household work intensity also markedly increases the size of the association between household composition and low income, indicating that, given the same work intensity, households with more working aged members are even more likely to avoid low income. Household work intensity also increases the association between extended family household structure and low income, indicating that less intense work activity among extended family households increases the likelihood of low income among immigrant and nonimmigrant extended family households. Similarly, less intense work activity among less educated, black and Asian household increases the incidence of low household income, while more intense work activity among single parent and Hispanic households reduces their experience of low income.

2004 Panel

Turning now to the second panel in Table 2.9, model 1 predicts low income among households in the 2004 panel of the SIPP using demographic characteristics. In contrast to the 1996 panel, immigrant headship is predictive of low household income. Education remains strongly associated with low income across panels, the least educated households are the most likely to have low income, while households are less likely to have low income as the educational attainment of their members increases. Minority headed and single parent households are substantially more likely to have low income than are white headed households and households that do not include single parents.

To examine the relationship between household structure and financial hardship, model 2 includes an indicator for extended family households. Extended family households are strongly negatively related to low household income, offering support for the expectation that extended family households are better able to avoid financial hardship than are other households. The strength and size of the association between immigrant headship and low income increases with the inclusion of the extended family household indicator, suggesting that immigrant households avoid greater financial hardship by residing in extended family households. The association between single parent households and low income increases substantially with the inclusion of extended family households, indicating that extended family households are protected against greater incidence of low income by residing in extended family households. The model similarly indicates that minority headed households avoid greater financial hardship by residing in extended family households.

To assess the expectation that immigrant extended family households are better able than nonimmigrant extended households to avoid hardship, model 3 incorporates an indicator for immigrant extended family households. As in the 1996 panel, immigrant extended family households are strongly negatively associated with low household income, offering support for the expectation. The size and strength of the association between immigrant headship and low income increases further with the inclusion of the indicator of immigrant extended household structure, indicating that extended family household structure provides immigrants additional protection against low household income relative to other household structures.

Model 4 includes the share of household members who are of working age in order to capture the effect of household composition on the relationship between household structure and financial hardship. The inclusion of this measure indicates that households that include more working aged members are less likely to have low levels of income. The inclusion of fewer working aged members and more young and elderly members accounts for some of the greater incidence of low income among the least educated and single parent households. The inclusion of more working aged members also accounts for slightly lower likelihoods of low income among black and Hispanic households.

Finally, model 5 includes the average number of hours worked weekly by working aged household members to assess how household work activity influences the relationship between household structure and low income. Expectedly, households that include members who are more intensely engaged in paid labor are less likely to have low income. The inclusion of household work intensity indicates that extended

family households experience greater incidence of low income by virtue of less intense work activity, while more intense work activity on the part of immigrant extended family households results in less incidence of low income. Less intense work activity on the part of household members results in greater incidence of low income among less educated households and Asian households, while more intense work effort results in lower likelihood of low income among single parent, black and Hispanic households.

Extended family household structure protects against low household income in very much the same way that it protects against household income poverty. Similarly, immigrant extended family households are better able to avoid low income than are nonimmigrant extended family households. These findings offer support for both of the expectations formed previously. The composition and, especially, the work intensity across households explains some of extended family households' experience of low income and some of immigrant extended family households' ability to avoid low income.

DISCUSSION AND CONCLUSIONS

Much of the voluminous research on changing family and household structure has centered on shifts away from the nuclear family household form as typified by divorce, nonmarital childbearing, and single-parent families (Cherlin 2010; Smock & Greenland 2010). A recent current in this research has focused on the increase in extended household living as an additional shift away from the nuclear family and corresponding two-generation household. This research finds that extended

households are often formed as a rational reaction to hardship or the expectation of hardship on the part of members (Goldscheider & Goldscheider 1999; Riley & Riley 1993; Speare & Avery 1993), however, it is argued that extended households are also formed among immigrants by virtue of cultural values of familism (Angel & Tienda 1982; Burr & Mutchler 1993; Kamo 2000). In this paper, I use data from the 1996 and 2004 panels of the SIPP to examine the importance of household resources and extended family household structure across immigrant and nonimmigrant households. I focus, in particular, on change in the relationship between resources and material hardship, and change in the association between extended family households and hardship across panels.

This study's empirical results provide several insights. First, the economic resources of households are protective against material hardship across both panels, and are slightly more protective against material hardship in the 2004 panel. Additionally, transfer income is predictive of material hardship across both panels, but has a smaller and weaker effect on the likelihood of hardship in the 2004 panel. This supports the expectation that the importance of household resources increases between panels.

The results provide circumstantial support for the expectation that PRWORA changes to the rules governing many social programs increased the importance of household resources for material hardship by constraining the eligibility of individuals for program benefits and by limiting the level of support available to individuals. The increase in the importance of household resources offers support for this conclusion, while the decreasing predictive effect of transfer income makes the picture less clear.

That transfer income generally becomes less consequential for material hardship may result from a number of factors. One possibility is that reforms served to more effectively target transfers, with the result that households that receive or receive more transfer income avoid hardships more effectively. A second possibility is that change in the association between transfer income and hardship reflects constrained access to program benefits, or access to lower levels of program benefits such that disadvantaged households that are likely to experience material hardship receive lower levels of or no benefits in the 2004 panel, while such households would have received benefits or greater benefits in prior to reform. Undoubtedly any number of additional factors may interact to affect the change in the association between transfer income and material hardship.

This study also considers the impact of extended family household structure across immigrant and nonimmigrant households. With respect to material hardship, the analysis finds that extended family household structure is protective against some forms of material hardship, but indicates that the protection against material hardship offered by extended family households decreases markedly between the 1996 and 2004 panels. In contrast to material hardship, extended family household structure is consistently protective against financial hardship across panels of the SIPP.

Moreover, extended family households formed among immigrants offer additional protection against financial hardship. This additional protective effect is only partially derived from more intense work activity on the part of immigrant households, suggesting that familist values may, indeed, provide for some of the additional protection. These findings offer mixed support for the expectation that extended

family households protect against material hardship and immigrant extended family households offer additional protection against material hardship, and strong support for the expectation that extended family households protect against financial hardship and immigrant extended family households offer additional protection against financial hardship.

The analysis draws a stark contrast between the stability of the extended family household effects for financial hardship and the waning importance of extended family household structure for material hardship. This is illustrative of the primacy of the explicitly financial motivations that are frequently cited among the major motivations for the formation of extended family households across immigrant and nonimmigrant populations (Aquilino 1990; Bengtson 2001; Bryson & Casper 1999; Pebley & Rudkin 1999). This does not discount the possibility that familist values result in additional protection against hardship for immigrant households, as immigrant extended family households are consistently advantaged relative to nonimmigrant extended family households in their avoidance of financial hardship. Rather, this suggests that extended family households, immigrant and nonimmigrant, prioritize resource generation in household decisions.

This study is not without limitations, which give some caution to the conclusions reached here. As noted previously, it is difficult to accurately disentangle the impacts of familist values from structural influences, much less to measure the strength of familist values across individuals (Sarkisian & Grestle 2004). As such, the conclusions reached here may overstate the role of familism, while a more general set of cultural and structural factors – inclusive of familism and its effects – associated

with immigrant status may impact financial hardship. Alternatively, without the ability to accurately measure familism, its impact may be understated.

Finally, additional important questions about the protective effects of household extension among immigrants remain to be answered. As the data constrain those questions that can be assessed presently, the impact of immigrants' place of origin and generational status (i.e., first-, second- or third-generation) as it relates to household composition remain intriguing and consequential topics to be pursued using other data. Given the present relative peak in immigration, changes in immigration flows' magnitudes and origins have the potential to affect the dynamics observed here, particularly if immigrant origins and generational status are consequential for the protection offered by extended household forms, highlighting the durable impacts of the dynamics highlighted here.

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CHAPTER 3

THE ROLE OF MATERIAL HARDSHIP IN GRADE RETENTION

ABSTRACT

Retention, through its strong influence on educational tracking decisions and on the likelihood of dropout in high school or earlier, has a strong effect on the educational and labor market outcomes of students. This study assesses the way in which material hardship, alongside more frequently studied dimensions of family background, affects the likelihood of in-grade retention among primary school students. Analysis indicates that students in households that suffer material hardship face a greater likelihood of in-grade retention than do their peers who do not face hardship. The likelihood of retention for students living in households that experience food insufficiency is inflated by a factor greater than that observed among Black and Hispanic students relative to white students.

INTRODUCTION

The lived experience of low income as popularly conceived includes the experience of material hardship – inadequacies in living conditions or the inability to satisfy basic needs. The conceptual link between the low income and material hardship is concretely manifest in means-tested government programs that provide targeted support to prevent these hardships. While commonly thought of in tandem, low income and material hardship are not as strongly linked as implied by this popular conception (Bauman 1999; Beverly 2000, 2001; Meyer and Jencks 1989). This paper examines the effect of material hardship, in conjunction with that of household

background, on children's rate of progress through school by focusing on hardships' effects on the likelihood of in-grade retention during primary schooling. Grade retention is important insofar as it is associated with low academic performance and attainment, and with lower earnings later in life (see Hill and Duncan 1987 for example). The association between material hardship and grade retention is thus important for understanding how disadvantage is reproduced across generations.

Despite the long studied and well-established association between socioeconomic background and outcomes across the lifecourse (Blau and Duncan 1967; Duncan and Brooks-Gunn 1997a), little is known about how hardship affects life chances. A limited body of research examines material hardship as it relates to child outcomes and a still smaller body of research considers its impact on academic outcomes. The set of studies that do examine this relationship are largely limited – often by virtue of the measures available – in the set of hardships considered, often to a single dimension of material hardship. This study expands upon prior analyses by considering the effects of multiple dimensions of hardship jointly with that of family background.

GRADE RETENTION

In-grade retention is commonplace in the American educational system, with approximately 13 percent of students having been retained by 9th grade (Department of Education 2012). There is substantial variation in the experience of retention, however, with 3.3 percent of Asian students, 9.5 percent of non-Hispanic white students, 15.3 percent of Hispanic students and 24.7 percent of black students having

been retained at least once by the time they reach 9th grade (Department of Education 2012). The differences in retention rates by race follow the relative ranking of race-ethnicity groups by household income, suggesting that income – in combination with race-ethnicity – structures of grade retention.

Although there is some debate about the direction of the association between grade retention and later academic outcomes, the bulk of studies show a negative association. For example, Hong and Raudenbusch (2005) find reading scores to decrease by 15-percent and math scores to decrease by 20-percent in the year immediately following retention. Other studies find that retained students score one-third of a standard deviation lower than promoted peers do on standardized tests in the years following retention (Holmes and Matthews 1984), and that retained students' academic performance continues to diverge from non-retained peers as they progress through school (Gottfredson, Fink and Graham 1994; McCoy and Reynolds 1999; Thomas, et al. 1992). Moreover, not only do retained students fail to catch up to their peers (Meisels and Liaw 1993), but slower growth in math scores relative to non-retained students (Wu, West and Hughes 2008) suggests that they are disadvantaged in learning new material as well. While most research finds in-grade retention to be injurious to student's learning, some does not find this to necessarily be the case.

The most favorable assessments of in-grade retention effects find only transitory benefits to retained students. Jimerson's (2001) meta-analysis of 20 studies finds most to support the association of retention with negative outcomes, concluding that – at best – grade retention does not provide any greater benefit to retained students than would continuous promotion. This assessment is supported by Hong and Yu's

(2007) finding, one of the more favorable toward retention, that the negative effects of kindergarten retention on test scores fade over a five year period, while the impacts of retention in first grade do not diminish in subsequent years. Similarly, Peterson, DeGracie and Ayabe (1987) find that retained students improve in relative class standing in the year that they repeat a grade, that some students maintain an improved class standing in the year after repeating a grade, but that by the second year after repeating a grade retained students have no advantage relative to non-retained classmates. Less encouragingly still, Mantzicopoulos and Morrison (1992) find that retained students only improve their test scores in the grade that they repeat, but none beyond. In any of these cases, any improvement in learning and performance is quickly lost, indicating that in-grade retention confers little advantage upon students.

Poorly performing students are not uniformly retained in grade, making low-performing non-retained students the best peers against which to compare retained students' academic trajectories. Indeed, at the time of retention, retained students do not meaningfully differ from non-retained peers in terms of IQ (Jimerson, et al. 1997), suggesting that retained students possess the same raw capacity for learning as do their promoted peers. Similarly, reported classroom behavior among low-achieving promoted students is very similar to that of retained students (Jimerson and Ferguson 2007). In spite of these similarities, retained students perform more poorly than does a matched sample of promoted peers (Reynolds 1992), indicating that in-grade retention has negative effects for students that extend beyond the minimal initial differences in performance and behavior.

Additionally, retention can affect test scores and grades due to worsening behavior among retained students in the years following retention. The negative behavioral effects of in-grade retention persist over time, as do the negative effects on students' school engagement (Hong and Yu 2008; Jimerson 1999; Roderick 1994). Students who are retained exhibit more behavioral and emotional problems (Jimerson, et al 1997; Sandoval 1984), more aggressive behavior, and poorer social functioning than their peers do in the years following retention (Jimerson and Ferguson 2007; Thomas, et al. 1992). These behavioral impacts are particularly consequential as classroom behavior is a major determinant of teachers' assessments of students (Farkas, et al. 1990). This offers some insight into the observation that prior retention predicts retention among students (Alexander, et al. 2003; Rumberger 1995), and that retention predicts tracking decisions (Dauber, Alexander and Entwisle 1996) and the stability of tracking decisions over time (Gamaron 1989; Hallinan 1992; Moller et. al 2006). These associations hint at some of the more far-reaching implications of retention for students.

Retention is strongly related to outcomes much later in students' academic careers and even after they have finished their educations. The link between retention and attainment is most concretely suggested by retention's very strong association with dropout from middle school (Rumberger 1995) and high school (Alexander, et al. 1997; Jimerson, et al. 2002a; Jimerson, et al. 2002b; Roderick 1994; Stearns, et al. 2007). Alexander and colleagues (1997) discuss dropout as a cumulative process that is strongly influenced, independent of socioeconomic and demographic factors, by students' attitudes, behaviors, scores, tracking and other early school experience. As

these factors are all affected by prior retention (Jimerson 1999), the strong association between in-grade retention and dropout emerges.

Beyond the strong association with dropout, which has a host of negative impacts in and of itself, in-grade retention is associated with individuals' success in the labor market. In addition to the greater likelihood of dropout, students who are retained are also less likely to enroll in postsecondary education even if they don't drop out (Fine and Davis 2003). Both lack of a high school diploma and lack of any postsecondary education in themselves disadvantage individuals relative to others in the labor market (Hout 2012). Beyond this disadvantage, individuals who were retained in school have lower labor market earnings in adulthood (Eide and Showalter 2001). In addition to having lower earnings, the previously retained hold lower status jobs and managers evaluate them as less competent than other employees (Jimerson 1999). Taken together, this suggests that in-grade retention has both negative effects for students' educational attainment and negative effects for their success in the labor market that extend beyond the disadvantage associated with lower educational attainment.

FAMILY BACKGROUND

Early analyses of large-scale representative data focused, in part, on the relationship between retrospective reports of parental occupation and education, and the occupational attainment of children as adults. This research shows a consistent association between family background characteristics, and the educational and occupational attainment of children as adults (Blau and Duncan 1967; Featherman and

Hauser 1978; Sewell and Hauser 1975). More recent research reaffirms these findings using longitudinal data that do not rely on retrospective reports of family background (Brooks-Gunn and Duncan 1997; Haveman and Wolfe 1994; Hill and Duncan 1987). This research also finds family background effects for more temporally proximate outcomes than adult attainment: for example, health and chronic health problems among children (Aber, et al. 1997; Klerman 1991), the quality and safety of children's housing (McLoyd 1998), and contemporaneous academic performance (Smith, Brooks-Gunn and Kabanov 1997).

In a collection of 12 studies focused around the effect of childhood poverty across a range of outcomes (Duncan and Brooks-Gunn 1997a), replication analyses find that family income is the factor most strongly associated with measures of child academic ability and achievement, although the association between family income and children's physical, mental and behavioral health is much weaker. Duncan and Brooks-Gunn note that "family income is usually a stronger predictor of ability and achievement outcomes than are measures of parental schooling or family structure" (p.597), highlighting the central role of income and income hardship.

Even conditioning on income, however, other dimensions of parental status and family structure show significant associations with child outcomes. Parental educational attainment, for example, affects students' ability and achievement through parents' educational and career expectations of children (Alexander and Eckland 1975; Sewell, Haller and Portes 1969), and through the quality of the home environment in which children are raised and the cognitive stimulation provided by those environments (Guo 1998; Guo and Harris 2000). Similarly, Astone and

McLanahan (1991) assert that in order to facilitate their children's realization of educational expectations parents must reinforce and reward those behaviors associated with achievement.

The material environment, too, is associated with children's learning and educational attainment. Much of this research focuses on the availability of educational materials (e.g., books, computers) in the home (Yeung, Livner and Brooks-Gunn 2002). Other scholars emphasize the provision of other types of resources crucial to supporting children's learning and educational attainment (Duncan, Featherman and Duncan 1972). If these material resources are absent or limited, disadvantaged children are less likely to benefit from educational environments that support learning outcomes.

Although we now have a substantial body of research on some of the predictors of children's learning and attainment, we still know relatively little about the effect of material hardship on children's achievement trajectories. Material hardship captures a dimension of family background, material deprivation, that is not captured by the commonly used measures of income poverty and education. Analysis of the effect of material hardship alongside those of income and parental education allows for an assessment of the interrelation and individual effects of these two related, but distinct, forms of deprivation.

MATERIAL HARDSHIP

Poverty is popularly conceived of in terms of lived experience, inability or difficulty in satisfying basic needs. In practice, however, poverty is analyzed in terms

of measured income. In principle, measures of poverty identify those individuals and households whose consumption – as inferred from their income – falls below an administratively determined threshold. This is most apparent in the indexing of the official United States poverty threshold to the market price of a basket of goods necessary (in 1965) to provide a nutritionally adequate diet. Supplemental poverty measures acknowledge that the official poverty measure does not adequately capture family income (or in-kind) resources or family needs, nor do they necessarily capture material deprivation (Sen 1979; Slesnick 1994). Rather than assume that a given level of income is successfully translated into a minimally adequate level of consumption, measures of material hardship explicitly assess whether households experience the events and circumstances that correspond to lower than minimally adequate levels of consumption.

The measurement of material hardship in the United States began with Mayer and Jencks' (1989) analysis of hardship among Chicago residents, which they based on two surveys. They find that only 24 percent of the variation in families' experience of material hardship – the sufficiency of food eaten in the household, housing conditions and crowding, ability to meet expenses, eviction, utility services disconnection, health insurance coverage, and medical and dental care – is explained by socioeconomic status. In subsequent years, analyses based on nationally representative data likewise find only a moderate association between income and material hardship (Beverley 2001; Boushey, et al. 2001; Mayer 1997; Rector, et al. 1999).

While material hardship is not as strongly associated with level of income or change in income as popular conception would suggest, a moderately strong relationship does exist. For example, the incidence of hardship decreases as income quintile increase (Sullivan, Turner and Danziger 2008). Similarly, slightly more than half of families with incomes falling below the poverty threshold experience at least one hardship, compared to 13 percent of non-poor families (Federman, et al. 1996). In spite of this gross relationship and the relative prevalence of hardship among the poor, Short's (2005) comparison of material hardship measures to the official poverty measure, a relative poverty measure and an experimental poverty measure finds that none of the measures serve well to capture the group of people who experience material hardship. Short's analysis echoes a point that is often raised in hardship research, that families that experience poverty and families that experience material hardship are two distinct groups (Beverly 2000; Edin and Lein 1997; Rector, Johnson and Youssef 1999).

The modest correlation between material hardship and income poverty may, in part, arise from a rather weak correspondence between income and consumption (Mayer 1997; Meyer and Sullivan 2003). This is partially evidenced by relatively lower rates of poverty observed when measured via consumption rather than income (Selsnick 1993). Consumption is tied to material hardship insofar as consumption in different domains, some corresponding to measures of material hardship, can become rival when resources are constrained. Assuming an equivalent resource set, divergent household decisions, behaviors and strategies can result in the experience of material hardship or the satisfaction of basic needs. The present analysis explores the way in

which the dynamics underlying the experience of material hardship, alongside the experience of hardship itself, combine with family background to affect children's progression through school.

Previous study of multiple dimensions of material hardship has largely been limited to analysis of the incidence of hardship in relation to income (Iceland and Bauman 2007; Sullivan, Turner and Danziger 2007, for example), policy change (Danziger, et al. 2005; Kalil, Seefeldt and Wang 2002), and family structure (Bauman 2002; Brown 2004; Geller, et al. 2009). Relatively few studies consider the effects of multiple dimensions of material hardship.

Material Hardship Effects

Medical hardship, in the form of unmet medical need or lack of health insurance coverage, is often examined in the medical literature. Medical hardship is associated with worse child health and, perhaps less expectedly, greater parental depression (Ettner 1996; Holl, et al. 1995, Newacheck, et al. 1998). When additional dimensions of material hardship are considered, child health is similarly strongly associated with material hardship (Ashabi and O'Neal, 2007; Frank, et al. 2010; Yoo, Slack and Holl, 2007). Beyond health, material hardship has other consequential effects for household members. Exposure to greater levels of material hardship is associated with greater stress among adults and children, and more severe reported behavior problems among children (Gershoff, et al. 2007; Zilanawala and Pilkauskas 2012). In addition to the greater likelihood of stress for adults who experience material hardship, they also suffer more severe depression (Butterworth, Rodgers and Windsor 2009; Mirowsky

and Ross 2001), the strength of this relationship is such that material hardship mediates much of the relationship between low household income and depression (Heflin and Iceland 2009). Additional research indicates that the relationship between material hardship and children's outcomes is mediated by changes in parents' mental health and the harshness of parenting behavior that result from the experience of material hardship (Ashibi and O'Neal 2007).

Food Insecurity Effects

While there is a relative lack of research on multiple forms of material hardship and their effects, and on other individual material hardships, there is a comparably large body of research on food insecurity and its effects. There are two reasons for this. First, the development of the USDA Food Security Survey Module has precipitated the inclusion of measures of food-related hardship in more surveys than other dimensions of material hardship. And, second, there is a notable focus on food-related hardship in the United States (Heflin, Sandberg and Rafail, 2009) in both popular and academic discourse.

For all but the youngest household members food insecurity is associated with lower intake of nutrients and lower overall caloric intake (Rose 1999). Additionally, as the severity of household food insecurity worsens, the likelihood and severity of nutrient deficiencies increases for all household members (Kendall, Olson and Frongillo 1996). Likely as a result of poorer nutritional intakes, individuals who face food insecurity have biomarkers that are indicative of poorer immune function (Dixon, Winkleby and Radimer 2001). Indeed, food insecurity is associated with poorer health

status (Vozoris and Tarasuk 2003), and with greater incidence of chronic illness (Seligman, Laraia and Kushel 2010). The relationship between food insecurity and both poor health and chronic illness is particularly marked among children (Cook, et al. 2013; Weinreb, et al. 2002).

While food insecurity is a strong correlate of physical health, it is also strongly related to mental health and children's behavior. Food insecurity predicts depression and anxiety among children and adults (Gundersen 2011; Hamelin, et al. 1999; Laraia, Sieg-Riz and Gundersen 2006; Leung, et al 2014; Weinreb, et al. 2002), major depressive episodes and generalized anxiety disorder among adults (Melchior, et al. 2009; Whitaker, Phillips & Orzol 20006), and is associated with posttraumatic stress disorder (Weinreb, et al. 2002) and anxiety (Siefert, et al. 2001; Vozoris & Tarasuk 2003). Moreover, the effects of food insecurity on the likelihood of depression and anxiety are more marked among low-income mothers (Heflin, Siefert and Williams 2005) and, adjusting for other characteristics, is a better predictor of depression than income or education (Wu and Schimmele 2005). In addition to being at greater risk for depression and anxiety, food insecure children are also more likely to have seen a psychologist or to have difficulty getting along with others (Alaimo, Olson and Frongillo 2001), including fighting with other children, having trouble with teachers, and taking others children's possessions (Olson 1999).

While food insecure children do not differ from food secure children in cognitive functioning (Alaimo, Olson and Frongillo 2001; Winicki and Jemison 2003), in more extreme cases of food insecurity cognitive ability is affected. Both malnutrition and fasting are predictive of poorer cognitive functioning in children

(Bryan, et al. 2004; Pollitt, Cueto and Jacoby 1998). Similarly, hungry children – those who experience hunger in addition to the household concern that there will not be enough food for members to eat – are twice as likely to be classified by parents and teachers as having impaired cognitive function (Murphy, et al. 2008). Like children, adults who experience hunger report difficulty concentrating at work and carrying out work tasks due to both physical and cognitive limitations arising from hunger (Hamelin, Habicht and Beaudry 1999).

Finally, household food insecurity affects the relationships among household members. Adults in households that report food insecurity are more likely to report depressive symptoms and have poorer health (Cook et al 2013), and are more likely to suffer anxiety (Weinreb et al 2002). In practice this makes parents are less available to children by virtue of both being more withdrawn and spending more time outside of the household procuring food (Hamelin, Habich and Beaudry 1999). If, indeed, food insecurity affects the harshness of parent-child relationships in the same way as does a latent index of material hardship (Ashiabi and O’Neal 2007), it may have further negative impacts on children’s health and achievement.

Material Hardship and Education

Food insecurity is associated with greater reported behavioral issues in school-aged children (Dunifon and Kowaleski-Jones 2003; Kleinman, et al. 1998; Slack and Yoo 2005, Whitaker, Phillips and Orzol 2006). In addition to the behavioral problems, children living in food insecure households exhibit learning problems in school, and both behavioral and learning problems grow over time relative to peers (Howard

2011). Interestingly, while food insecure children have lower test scores they do not differ from food secure children on measures of cognitive functioning (Alaimo, Olson and Frongillo 2001; Winicki and Jemison 2003), suggesting that the difficulties in learning are not based in differences in raw capacity. To this point, Ashiabi (2005) observes that the relationship between food insecurity and children's school engagement is mediated by food insecurity's effects on children's health and emotional wellbeing. Similarly, Murphy and colleagues (1998) find that food insecure students have greater rates of absenteeism and are more often tardy to school.

Bearing more directly on educational outcomes, food insecurity is associated with lower scores on assessments of ability (Jyoti, Frongillo and Jones, 2005). Food insufficiency is also associated with a greater likelihood of having experienced grade retention or having been suspended from school, in addition to – or in part attributable to – greater behavioral problems and lower test scores (Alaimo, Olson and Frongillo, 2001). Together these findings suggest that food insecurity is predictive of lower levels of academic achievement. It is unclear, however, whether these associations are robust to the inclusion of additional dimensions of hardship or to subsequent, rather than prior, grade retention. Gershoff and colleagues (2007) consider a range of material hardships and associated outcomes for six-year-old students and find a latent index of material hardship to be associated with lower measured cognitive ability and reports of poorer behavior. Zilanawala and Pilkauskas (2012) find that among five-year-old children difficulty paying bills, utility service disconnection, and housing instability are predictive of more problematic child behavior. They also find a latent index of hardship is more strongly related to poor child behavior than are individual

dimensions of hardship. This suggests that multidimensional hardship, measured as a latent index or as multiple dimensions of hardship, is consequential for outcomes early in one's academic career through hardship's effects on classroom behavior, cognitive functioning, health and impacts on parent-child relationships.

THEORETICAL MODEL

Taken together, existing studies indicate that material hardship is consequential for children's behavior, physical and mental health, cognitive functioning, learning, and for parent-child relationships. Research indicates that these outcomes are affected both directly and as mediated by material hardship effects on parents' physical and mental health, and availability in the home. Research shows that material hardship affects children's cognitive ability (Hamelin, Habicht and Beaudry 1999; Murphy, et al. 2008; Zilanawala and Pilkauskas 2012), classroom behavior (Gershoff, et al. 2007; Zilanawala and Pilkauskas 2012) and health (Ashiabi and O'Neal, 2007; Frank, et al. 2010; Yoo, Slack and Holl, 2007), which may in turn affect learning through its effect on absence from school. As achievement and behavior are two of the main indicators that teachers use to evaluate students, and inform tracking and retention decisions (Farkas, et al. 1990), I expect that children living in households that report material hardship are, accounting for other dimensions of family background, more likely to be retained in grade.

Given the amount of research on food insufficiency relative to other forms of material hardship, the impact that food insecurity has across learning, health and behavior, the association of more severe food hardship with cognitive impairment, and

the observation that more severe food insecurity has greater effects (Bryan, et al. 2004; Pollitt, Cueto and Jacoby 1998), I expect that food insufficiency is predictive of in-grade retention. While a smaller body of research considers the effects of other forms of material hardship, this research indicates that other forms of material hardship affect children and other household members similar. Accordingly, I expect that other dimensions of material hardship predict children's retention in grade.

DATA, MEASURES AND ANALYTIC STRATEGY

Data

I use a sample of primary school students drawn from the 1996 panel of the Survey of Income and Program Participation (SIPP), a nationally representative rotating panel survey with an oversample of households in high poverty areas. In addition to general demographic information, the SIPP collects income, labor force, and program participation and eligibility data, and includes an additional topical module at each survey wave, the content of which varies. The 1996 SIPP covers four years, December 1995 through February 2000. The sample is restricted to those students enrolled in primary grades at wave six, and for whom information is sufficient to determine experiences of retention and material hardship over the two-year period covering waves six through 12 (December-March 1997/8 through December-March 1999/2000).

The SIPP offers a much broader set of measures of material hardship than other commonly used observational studies in the child learning literature. The SIPP measures of material hardship – food insufficiency, inability to meet household

expenses, inadequate medical or dental care, and household and neighborhood conditions – correspond to common notions of the experience of low income, as evidenced by means-tested government programs targeted to minimize hardship in these domains. WIC, SNAP, and school meal programs support food sufficiency; rent controls, public housing, and Section 8 support families’ ability to pay rent; the Low Income Home Energy Assistance Program supports the payment of utility bills; Medicaid supports the receipt of medical services; and, in some respects, the housing assistance programs noted above support better quality housing than what might otherwise be obtainable. In line with the popular association of low income with material deprivation, receipt of program benefits is contingent upon income that does not meet an absolute income threshold. The analysis of material hardship measures alongside measures of income more accurately captures the constellation of circumstances that reflect the experience of low income, as households may have comparable levels of income but vary in the experience of hardship.

The SIPP contains core content, which is consistent from survey wave to survey wave, and topical modules, which differ from wave to wave. The present analyses draw on core demographic, income and benefit receipt data as well as data from the sixth, eighth, and 12th survey wave topical modules. The child wellbeing topical module – included in wave six and 12 interviews – includes information about children’s educational histories and orientation toward school, and about parental expectations for children’s educational attainment. The adult well-being topical module – included in wave 8 – includes questions about the household experience of material hardship: the sufficiency of food, the ability to pay bills and receive medical

care when needed, and questions about housing conditions. For the analyses the data are weighted by the wave 6 panel weight distributed with the SIPP data, multiplied by the inverse probability of persistence through wave 12 of the survey.

I elect to use the 1996 panel of the SIPP as prior panels include the topical modules used to construct measures for analysis in an order that does not allow for the analysis performed here. I do not use later panels of the SIPP so as to limit the contribution of policy and economic dynamics to the hardship-retention relationship examined here. The 2004 panel occurs well after welfare reform policies were instituted and sufficient time has passed for sanctions associated with reforms to take effect and potentially affect many respondents. The 2008 panel covers a period of dramatic economic contraction that may introduce additional dynamics to the analysis.

Outcome Measure

Data drawn from the sixth and 12th wave topical modules are used to construct an outcome indicator of whether a student is retained in-grade between wave six and wave 12. In the topical module, parents who report that their child has repeated a grade are asked to specify the grade or grades the child has repeated. Students who are reported at wave 12 to have repeated the grade in which they were enrolled at wave 6 or a subsequent grade are counted as having been retained, provided that there is no report at wave 6 of the student having previously been retained in that grade.⁴

⁴ Those students who are reported at wave six to have repeated the grade in which they are contemporaneously enrolled and subsequently repeat the same grade cannot be determined from the data used to construct the outcome measure. Accordingly, a small number of retained students may be uncounted.

Hardship Measures

The adult well-being topical module is used to construct four indicators of material hardship. A food insufficiency measure is constructed from reports of the adequacy of food eaten in the household over the previous four months. Households are considered to be food insufficient if the respondent characterize the quantity of food eaten in the household in the previous four months as “sometimes not enough to eat” or “often not enough to eat”. The food insecurity measures in the SIPP are not consistent with the USDA’s Food Security Module, which is commonly used to assess food insecurity – concern about the adequacy of household food supplies as opposed to the experience of inadequate household food supplies captured by food insufficiency measures. While different from the USDA food insecurity measures, the SIPP measure used here has been validated elsewhere (Christofar & Basiotis 1992).

Three additional measures of material hardship are constructed using the adult well-being topical module data. A measure of medical hardship is constructed to indicate membership in a household in which at least one person was unable to receive medical or dental care when needed in the previous year. An indicator of bill-paying hardship is constructed for those living in households that fail to pay the full amount of rent or mortgage, or utilities bills in the prior 12 months. A measure of housing quality is constructed to indicate those households in which the reference person indicates that the condition of the home is unsatisfactory such that they would like to move elsewhere.

The four dimensions of material hardship used for analysis – food, bill paying, medical care and housing conditions – correspond to the dimensions used by Mayer

and Jencks (1989) in their study of material hardship in the Chicago area, although some of the specific measures differ slightly. These four dimensions are frequently used in analyses that consider multiple dimensions of hardship (see Short 2005; Rector, et al. 1999 for example), although it is common for measures to be collapsed into a latent index of material hardship. I follow Heflin, Sandberg and Rafail's (2009) suggestion and use these four dimensions of hardship individually, a suggestion based on the claim that there are different generative processes underlying each dimension of material hardship. Accordingly, these different dimensions may have differential influences on the likelihood of in-grade retention as well.⁵

Adjustment Measures

One challenge in assessing educational outcomes using the SIPP, compared to education-focused surveys, is a relative lack of measures of prior academic performance and of student and family orientation toward school. To capture prior school performance, I use Wave 6 reports of prior grade retention and prior expulsion, given that prior promotion is consequential for the accuracy of predicted achievement trajectories (Moller et. al 2006), and that prior retention increases the risk of subsequent retention through their effects on post-retention behavior and achievement. Students' attitudes toward school are captured by parental reports that students are disinterested in schoolwork, that they dislike going to school, and that they do not work hard in school. The influence of parental educational expectations is captured by

⁵ In analyses not reported here, material hardship is specified alternatively following others' suggestions in the literature. This does not affect the main findings presented here with respect to hardship as generally construed.

the construction of indicators of the level of schooling that the interviewed parent thinks the child will complete. Other surveys include more extensive measures of student's performance in and orientation toward school, but they do not include as comprehensive measures of material hardship as does the SIPP. While some of the interactions among student's educational background and school orientation, material hardship, and in-grade retention cannot be assessed using the SIPP data, they allow for a more thorough analysis of the joint effects of multiple dimensions of material hardship on the likelihood of retention.

I measure household income using total monthly income from all sources, averaged over the panel in order to better capture permanent income, as permanent income is more strongly related to hardship (Blau 1999; Mayer 1997; Mayer and Jencks 1989; Iceland and Bauman 2007). I also adjust by household size, and convert household income to 1998 dollars per household member.⁶

Indicators of parental educational attainment are constructed from wave six reports. Parental education is measured in these analyses as the highest level of education attained by either of the students' parents. Students are identified as Black, Hispanic, and non-Hispanic white; students from other racial or ethnic groups are too few to analyze separately, and rather than introduce heterogeneity into the three race categories, I exclude these students from the analysis. I also include indicators for single parent family, metropolitan residence, region of the country, age and sex.

⁶ This is done for interpretability. In analyses not presented here household income is alternatively specified following Congressional Budget Office recommendations (CBO, 2009) so as to best capture the economies of scale that advantage households. This alternative specification does not meaningfully affect the main findings presented here.

Analytic Plan

Descriptive statistics for the analytic sample are presented first. Students in the analytic sample are first compared by poverty status and then by number of hardships experienced. A series of logit models is then estimated to assess the effects of material hardship, conditional on other measures of family background and resources, on students' retention likelihoods. Effects are estimated first without adjusting for prior school experiences, then accounting for prior in-grade retention and expulsion, and finally adjusting for parental reports of students' orientation toward school.

RESULTS

Descriptive Analysis

Table 3.1 presents descriptive statistics for the full analytic sample, for those in households with income below the poverty threshold, from one to two times the poverty threshold, and above twice the poverty threshold. Hardship decreases as household income relative to the poverty threshold increases and the incidence of hardship is greater among households with lower incomes, consistent with the popular conception of material hardship as it relates to household income level. However, the fact that one in five students in households above twice the poverty threshold and two in five in households with incomes between the poverty threshold and twice the value of the poverty threshold highlights the fact that the poor and those facing hardships are not one in the same, and reaffirms that the association between income and hardship is only moderate – as contrast with the more strong and consistent association implied by popular discourse.

Table 3.1. Descriptive Statistics by Poverty Status

	All Households	Below Poverty Threshold	1-2x Poverty Threshold	Above 2x Poverty Threshold
Extended Family Household	0.12	0.16	0.11	0.11
Immigrant Household	0.10	0.09	0.11	0.09
Retained	0.13	0.20	0.14	0.10
Monthly Income (\$)	3826	1419	2457	5602
Net Worth (\$)	84773	31482	47888	127498
HH Food Insufficient	0.04	0.11	0.03	0.01
Bill Paying Hardship	0.20	0.38	0.24	0.10
Medical Hardship	0.14	0.23	0.18	0.07
Housing Hardship	0.07	0.12	0.10	0.03
Single Parent Household	0.32	0.57	0.34	0.20
Less Than High School	0.12	0.35	0.11	0.03
Some College	0.34	0.23	0.36	0.37
College	0.27	0.06	0.14	0.43
Black	0.17	0.31	0.19	0.09
Hispanic	0.15	0.26	0.19	0.08
Male	0.52	0.52	0.50	0.53
Age	8.20	7.80	8.22	8.49
North	0.19	0.18	0.17	0.20
South	0.30	0.34	0.32	0.28
Midwest	0.28	0.23	0.27	0.31
West	0.23	0.26	0.24	0.22
N	2820	628	756	1436

Source: 1996 SIPP; Note: household monthly income and net worth are presented in 1998 dollars for a household of four rather than the per-person dollar value for ease of interpretation.

Table 3.2 presents descriptive statistics for households by the number of dimensions in which hardship is reported. Most notably, Table 3.2 shows that those who experience any hardship are most likely to experience one, rather than multiple, hardships. As in Table 3.1, a moderate income-hardship association is observed as those households that report a greater number of hardships also report lower levels of income. However, the income differences between hardship groups are not as substantial as might be expected in light of the contrasts by income seen in Table 3.1. Education is related to the experience of hardship as the share of households with parents who did not graduate from high school increases as the number of hardships experienced increases, while the share of college-graduate households decreases. Finally, minority households are increasingly represented among the sub-sample as the number of household hardships increases.

Multivariate Analysis

Table 3.3 presents coefficients and fit statistics from logit models that predict in-grade retention in the two years between wave 6 and wave 12 of the SIPP. These models are estimated with background characteristics and measures of parents' expectations for their children, but without measures of prior school experience or students' school orientation⁷. Models in Table 3.3 and all other tables include average monthly

⁷ To account for the possibility that parental expectations are adjusted with the receipt of feedback from the school, models were estimated without the inclusion of parental expectations. These models do not yield estimates that meaningfully differ from those presented in Table 3.3, suggesting either that parental expectations are not affected in this manner or that feedback may not reflect the likelihood of retention with the accuracy that would be required for expectations to be adjusted more accurately.

Table 3.2. Descriptive Statistics by Number of Household Hardships

	No Hardships	One Hardship	Two Hardships	Three Hardships	Four Hardships
Extended Family Household	0.12	0.13	0.09	0.24	0.05
Immigrant Household	0.09	0.10	0.14	0.08	0.11
Retained	0.13	0.14	0.17	0.2	0.26
Monthly Income (\$)	4475	2604	1934	1566	1431
Net Worth (\$)	105827	32561	45659	25357	9501
HH Food Insufficient	0.00	0.05	0.10	0.61	1.00
Bill Paying Hardship	0.00	0.56	0.84	0.99	1.00
Medical Hardship	0.00	0.26	0.77	0.88	1.00
Housing Hardship	0.00	0.14	0.29	0.53	1.00
Single Parent Household	0.25	0.45	0.47	0.72	0.21
Less Than High School	0.09	0.17	0.21	0.40	0.32
Some College	0.34	0.34	0.31	0.24	0.21
College	0.33	0.15	0.09	0.06	0.37
Black	0.13	0.25	0.23	0.33	0.05
Hispanic	0.13	0.18	0.21	0.25	0.26
Male	0.52	0.50	0.56	0.54	0.63
Age	8.33	8.22	7.97	7.61	7.95
North	0.17	0.21	0.24	0.28	0.05
South	0.31	0.29	0.29	0.17	0.32
Midwest	0.28	0.29	0.29	0.19	0.37
West	0.23	0.21	0.24	0.36	0.26
N	1985	533	211	72	19

Source: 1996 SIPP; Note: household monthly income and net worth are presented in 1998 dollars for a household of four rather than the per-person dollar value for ease of interpretation.

household income per person in hundreds of 1998 dollars, the highest education attained by children's parents, age, male, race/ethnicity, single parent household, metropolitan residential status and region. Following the first paper's finding that household extension and immigrant headship are protective against financial hardship and some forms of material hardship, both of which are expected to affect the likelihood of in-grade retention, all models include indicators of immigrant headship, extended family household and immigrant extended family household. Consider first model 1, which predicts retention without accounting for material hardship.

Model 1 yields estimates that are consistent with prior research that shows that greater household resources and greater parental education are associated lower likelihoods of students' in-grade retention. While parental education and household income are not strongly related to retention, household net worth is strongly negatively related to the likelihood of retention. If an average household in the sample were to have its net worth increase by one standard deviation – from approximately \$80,000 to \$295,000 – the likelihood that a child living in that household is retained during the period of observation would decrease from about 12-percent to about 9-percent. Models 2 through 5 incorporate additional dimensions of material hardship with the sequential addition of indicators of bill-paying hardship, medical hardship and housing hardship across models. Despite the moderate association between income and material hardship, the addition of hardship measures has little effect on the association between income and grade retention. Among measures of material hardship, food insufficiency is the most consistently and sizably predictive of in-grade retention and is little affected with the addition of other measures of material hardship across

Table 3.3. Logit Models predicting In-Grade Retention using Household Food Insufficiency and Parental Expectations

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	0.102** (0.0437)	0.0984** (0.0424)	0.0999** (0.0433)	0.0974** (0.0423)	0.0974** (0.0423)
Material Hardship					
Food Insufficiency		1.764* (0.436)	1.802* (0.451)	1.681* (0.432)	1.679* (0.432)
Bill-Paying Hardship			0.941 (0.151)	0.898 (0.145)	0.897 (0.143)
Medical Hardship				1.218 (0.214)	1.214 (0.210)
Housing Quality					1.021 (0.252)
Background Measures					
Household Income	0.998 (0.00906)	0.999 (0.00883)	0.999 (0.00894)	0.999 (0.00893)	0.999 (0.00894)
Household Net Worth	0.996+ (0.00236)	0.996+ (0.00232)	0.996+ (0.00234)	0.996+ (0.00234)	0.996+ (0.00234)
Less than High School	1.158 (0.230)	1.115 (0.225)	1.117 (0.225)	1.108 (0.224)	1.107 (0.224)
Some College	1.269 (0.196)	1.266 (0.195)	1.264 (0.195)	1.264 (0.195)	1.264 (0.194)
College	0.912 (0.195)	0.909 (0.194)	0.904 (0.192)	0.910 (0.193)	0.910 (0.193)
Parental Expectations					
Less than High School	2.411	2.159	2.149	2.128	2.135

	(1.706)	(1.399)	(1.401)	(1.371)	(1.380)
Some College	0.933	0.935	0.934	0.945	0.944
	(0.220)	(0.223)	(0.222)	(0.224)	(0.223)
College	1.003	1.016	1.015	1.016	1.016
	(0.133)	(0.135)	(0.135)	(0.135)	(0.135)
Immigration and Household Extension					
Immigrant Household	0.804	0.803	0.804	0.797	0.797
	(0.160)	(0.159)	(0.160)	(0.159)	(0.159)
Extended Family Household	0.873	0.861	0.855	0.861	0.861
	(0.173)	(0.171)	(0.169)	(0.170)	(0.170)
Immigrant Extended Family Household	1.869	1.943	1.940	1.979	1.978
	(0.812)	(0.838)	(0.835)	(0.853)	(0.852)
N	2,820	2,820	2,820	2,820	2,820

Source: 1996 SIPP; Note: Data are weighted; Standard errors in parentheses; Adjustment variables not appearing above: male, age, black, Hispanic, single parent, region, metropolitan area; p<.1 *, p <.05 *, p <.01 **

models. The effect of food insufficiency is very little altered with the addition of other material hardship measures, in model 2 a child living in an average household that is food sufficient has an 11.61-percent probability of being retained while a child living in an otherwise average household that is food insufficient has an 18.63-percent probability of being retained in grade. For comparison, in model 5, which includes all material hardship measures, a child living in an average household that is food sufficient has an 11.60-percent probability of being retained and a child living in an average household that is food insufficient has an 18.36-percent probability of being retained. This suggests that material hardship impacts the likelihood of retention in a way that is distinct from income and separate from the relationship between income and the likelihood of retention. Coefficients for other measures of background, including parental expectations, are similarly little affected with the addition of measures of other dimensions of hardship, suggesting the primacy of the food insufficiency effect.

Table 3.4 presents estimates from models that incorporate measures of prior retention and prior expulsion. The addition of measures of prior school experience shows that prior experiences of in-grade retention are predictive of subsequent retention across the two year period over which the sample is observed. This is consistent with prior research discussed above, that highlights the negative impact of retention on achievement and behavior, factors with the potential to impact retention decisions. Prior expulsion is positively, but weakly, related to retention. As in Table 3.3, the inclusion of additional measures of material hardship across models does not consequentially affect the association between household resources and grade

Table 3.4. Logit Models predicting In-Grade Retention using Household Food Insufficiency, Parental Expectations and Prior School Experience Measures

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	0.102** (0.0440)	0.0992** (0.0428)	0.101** (0.0438)	0.0991** (0.0430)	0.0990** (0.0430)
Material Hardship					
Food Insufficiency		1.770* (0.434)	1.825* (0.458)	1.722* (0.444)	1.719* (0.444)
Bill-Paying Hardship			0.918 (0.151)	0.884 (0.145)	0.882 (0.144)
Medical Hardship				1.179 (0.210)	1.175 (0.206)
Housing Quality					1.028 (0.253)
Background Measures					
Household Income	0.999 (0.00886)	1.000 (0.00863)	0.999 (0.00875)	1.000 (0.00875)	1.000 (0.00875)
Household Net Worth	0.996+ (0.00234)	0.996+ (0.00230)	0.996+ (0.00233)	0.996+ (0.00232)	0.996+ (0.00232)
Less than High School	1.158 (0.227)	1.115 (0.221)	1.118 (0.222)	1.110 (0.221)	1.110 (0.221)
Some College	1.295+ (0.200)	1.294+ (0.200)	1.291+ (0.199)	1.290+ (0.199)	1.290+ (0.198)
College	0.959 (0.205)	0.957 (0.204)	0.951 (0.202)	0.955 (0.203)	0.954 (0.203)
Parental Expectations					
Less than High School	2.621 (1.860)	2.346 (1.522)	2.333 (1.526)	2.310 (1.495)	2.321 (1.507)
Some College	0.948 (0.223)	0.949 (0.225)	0.949 (0.224)	0.957 (0.226)	0.955 (0.225)
College	0.994 (0.131)	1.005 (0.133)	1.003 (0.133)	1.004 (0.133)	1.004 (0.133)

Prior School Experience					
Prior Retention	1.850**	1.852**	1.859**	1.843**	1.844**
	(0.344)	(0.345)	(0.346)	(0.343)	(0.344)
Prior Expulsion	1.250	1.255	1.273	1.252	1.251
	(0.518)	(0.506)	(0.516)	(0.514)	(0.512)
Immigration and Household Extension					
Immigrant Household	0.811	0.810	0.812	0.805	0.805
	(0.161)	(0.161)	(0.161)	(0.161)	(0.161)
Extended Family Household	0.860	0.848	0.840	0.846	0.846
	(0.169)	(0.167)	(0.165)	(0.166)	(0.166)
Immigrant Extended Family Household	1.897	1.972	1.966	1.999	1.997
	(0.817)	(0.843)	(0.839)	(0.854)	(0.853)
N	2,820	2,820	2,820	2,820	2,820

Source: 1996 SIPP; Note: Data are weighted; Standard errors in parentheses; Adjustment variables not appearing above: male, age, black, Hispanic, single parent; p<.1 *, p <.05 *, p <.01 **

retention. Again, in Table 3.4 food insufficiency is the strongest predictor of retention among the material hardship measures. In model 5, a child in an otherwise average household that is food sufficient has an 11.57-percent probability of being retained, while a child in an average household that is food insufficient has an 18.36-percent probability of being retained during the period of observation. The likelihood of retention for children in food sufficient and insufficient households that resemble the sample average on all other measures barely differ from those estimated using the models presented in Table 3.3. Notably, the magnitude of the food insufficiency effect is very little affected with the addition of prior school experience measures, despite the strong and sizable association between prior in-grade retention and retention in the two years between wave 6 and wave 12, again suggesting the distinctiveness of material hardship effects.

Table 3.5 presents estimates from models that incorporate parental reports of students' attitudes and behaviors related to school – dislike for school, disinterest in school and school work, and whether the student works hard in school – in addition to the prior experience measures included in Table 3.4. The inclusion of school orientation measures does not meaningfully affect the association between students' background and retention. As in Table 3.4, the new measures have a minimal impact on the association between material hardship and in-grade retention, with the probability of in-grade retention for children in food sufficient and insufficient households very closely approximating that estimated in previous models at 11.53-percent and 18.32-percent respectively. While not strongly predictive, reported dislike

Table 3.5. Logit Models predicting In-Grade Retention using Food Insufficiency, Parental Expectations, Prior School Experience and School Orientation Measures

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	0.105** (0.0450)	0.101** (0.0438)	0.104** (0.0450)	0.102** (0.0442)	0.102** (0.0442)
Material Hardship					
Food Insufficiency	1.757*	1.822* (0.428)	1.723* (0.454)	1.721* (0.442)	(0.442)
Bill-Paying Hardship	0.902	0.870	0.869 (0.148)	(0.142)	(0.141)
Medical Hardship			1.171	1.168 (0.209)	(0.205)
Housing Quality				1.022	(0.253)
Background Measures					
Household Income	0.998 (0.00876)	0.999 (0.00855)	0.999 (0.00868)	0.999 (0.00868)	0.999 (0.00868)
Household Net Worth	0.996+ (0.00231)	0.996+ (0.00227)	0.996+ (0.00230)	0.996+ (0.00230)	0.996+ (0.00230)
Less than High School	1.178 (0.232)	1.135 (0.226)	1.139 (0.227)	1.131 (0.227)	1.131 (0.226)
Some College	1.314+ (0.204)	1.313+ (0.204)	1.309+ (0.203)	1.309+ (0.203)	1.308+ (0.202)
College	0.974 (0.209)	0.972 (0.208)	0.964 (0.206)	0.967 (0.206)	0.967 (0.206)
Parental Expectations					
Less than High School	2.668 (1.894)	2.390 (1.553)	2.376 (1.557)	2.351 (1.526)	2.360 (1.537)

Some College	0.952 (0.223)	0.953 (0.225)	0.952 (0.225)	0.960 (0.226)	0.958 (0.225)
College	1.000 (0.132)	1.012 (0.134)	1.009 (0.134)	1.010 (0.134)	1.010 (0.134)
Prior School Experience					
Prior Retention	1.782** (0.340)	1.786** (0.341)	1.792** (0.342)	1.778** (0.339)	1.779** (0.339)
Prior Expulsion	1.092 (0.467)	1.099 (0.462)	1.113 (0.470)	1.094 (0.468)	1.093 (0.467)
School Orientation					
Dislikes School	1.298 (0.504)	1.314 (0.503)	1.313 (0.503)	1.302 (0.496)	1.302 (0.496)
Disinterested in School	1.071 (0.319)	1.061 (0.316)	1.064 (0.317)	1.059 (0.316)	1.061 (0.317)
Does not Work Hard	1.479 (0.550)	1.458 (0.534)	1.472 (0.539)	1.482 (0.542)	1.480 (0.542)
N	2,820	2,820	2,820	2,820	2,820

Source: 1996 SIPP; Note: Data are weighted; Standard errors in parentheses; Adjustment variables not appearing above: male, age, black, Hispanic, single parent, metro, region, household size, immigrant household, extended family household, immigrant extended family household; p<.1 +, p<.05 *, p<.01 **

for school and reports that children do not work hard in school are positively associated with retention, suggesting that the measures do accurately gauge the student's engagement with school and schoolwork to the extent that such engagement is associated with retention. Across these models, household food insufficiency is the most sizable and consistent predictor of in-grade retention – both by itself and with the inclusion of other forms of material hardship, and with and without measures of parental expectations, prior school experience and students' orientation toward school. For context, in these models, food insufficiency has an effect on the likelihood of retention greater than the difference in predicted probability of retention for otherwise similar black and white children.

Alternate Measures of Food Insufficiency

The SIPP's Adult Wellbeing topical module, from which the material hardship measures are drawn includes a handful of questions related to food hardship. The household food insufficiency indicator used in the previous analyses is based upon a question asked of all households, in which the household reference person is asked to characterize the quantity of food eaten in the household in the previous four months. The topical module also includes a question that asks household reference persons to similarly characterize the quantity of food eaten by children in the household over the previous four month period. Unlike the question about general household food sufficiency, only a subset among households with children is asked about the sufficiency of food eaten by children in the household.

Table 3.6. Descriptive Statistics by Food Sufficiency Status for Household and Child-Specific Food Insufficiency

	All Households	Household Food Sufficient	Household Food Insufficient	Children Food Sufficient	Children Food Insufficient
Extended Family Household	0.21	0.12	0.22	0.11	0.21
Immigrant Household	0.10	0.10	0.05	0.10	0.04
Retained	0.13	0.13	0.25	0.13	0.21
Monthly Income (\$)	3826	3922	1482	4013	1651
Net Worth (\$)	84773	87576	15709	90856	13582
HH Food Insufficient	0.04	0.00	1.00	0.01	0.36
Children Food Insufficient	0.08	0.05	0.74	0.00	1.00
Bill Paying Hardship	0.20	0.18	0.67	0.17	0.53
Medical Hardship	0.14	0.12	0.57	0.12	0.36
Housing Hardship	0.07	0.06	0.26	0.05	0.27
Single Parent Household	0.32	0.30	0.68	0.30	0.59
Less Than High School	0.12	0.11	0.41	0.10	0.32
Some College	0.34	0.34	0.25	0.34	0.30
College	0.27	0.28	0.09	0.28	0.10
Black	0.17	0.16	0.28	0.16	0.28
Hispanic	0.15	0.14	0.28	0.13	0.36
Male	0.52	0.52	0.56	0.52	0.55
Age	8.20	8.30	7.90	8.30	8.00
North	0.19	0.18	0.25	0.18	0.25
South	0.30	0.31	0.16	0.30	0.29
Midwest	0.28	0.28	0.27	0.29	0.18
West	0.23	0.23	0.31	0.23	0.27
N	2820	2710	110	2598	222

Source: 1996 SIPP; Note: household monthly income and net worth are presented in 1998 dollars for a household of four rather than the per-person dollar value for ease of interpretation.

After being asked about general household food insufficiency, all households are asked two additional questions about the household's supply of food. First, all households are asked whether "the food that we bought just didn't last and we didn't have money to get more" was never, sometimes or often true in the previous four months. Second, all households are asked whether "we couldn't afford to eat balanced meals" was never, sometimes or often true in the previous four months. All households with children that responded 'sometimes' or 'often' to either of these questions or to the initial question about household food sufficiency are subsequently asked whether it was never, sometimes or often true that children in the household did not have enough to eat in the previous four month period. From responses to this question, a child-specific food insufficiency indicator analogous to that for household food insufficiency can be constructed, indicating those children who sometimes or often did not have enough to eat. Table 3.6 presents descriptive statistics for the sample by household and child-specific food insufficiency.

One peculiarity across the table is that more than twice as many children in the sample live in households that report child-specific food insufficiency as live in households that report general household food insufficiency⁸. The discrepancy between reported household and child-specific food insufficiency is particularly counterintuitive given research that shows that children are typically the last members in households to suffer the consequences of limited food supplies (Radimer, et al.

⁸ To assess whether this difference is an artifact of the analytic sample rather than a characteristic of the panel more generally, descriptive statistics were generated using the household as the unit of analysis for all households that include children. Comparable differences across household and child-specific food insufficiency measures were observed, indicating that this is a characteristic of the data more generally.

1992). This discrepancy may result from priming attributable the series of questions asked in the topical module that select households into the child-specific food insufficiency question. Returning to the table 3.6, generally, households that do and do not report household food insufficiency are quite similar to those that do and do not report child-specific food insufficiency. This is cause for some optimism that the two food sufficiency measures capture the same dimension of material hardship in spite of the marked difference in the number of households reporting the two forms of food insufficiency. This is also suggested as about three quarters of households that report general food insufficiency also report child-specific food insufficiency.

To assess the possibility that the two food insufficiency measures capture the same dimension of material hardship, Table 3.7 presents models that predict in-grade retention that are analogous to those presented in Table 5, but substitute an indicator of child-specific food insufficiency for the general household food insufficiency indicator. Child-specific food insufficiency is positively associated with in-grade retention across models in Table 3.7, however the strength of the association is much less than that between general household food insufficiency and in-grade retention shown in Table 3.5. Similarly, the effect of child-specific food insufficiency on the likelihood of in-grade retention is smaller than the effect of household food insufficiency. Children in otherwise average households that do not report child-specific food insufficiency have a 11.59-percent probability of in-grade retention, very close to that predicted for children in food sufficient households in the previous models. In contrast to the models incorporating household food insufficiency, children in household that report child-specific food insufficiency and are average on

Table 3.7. Logit Models predicting In-Grade Retention with Child-Specific Food Insufficiency, Parental Expectations, School Experience & Orientation

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	0.105** (0.0450)	0.104** (0.0449)	0.106** (0.0459)	0.103** (0.0447)	0.103** (0.0447)
Material Hardship					
Child Food Insufficiency		1.252 (0.249)	1.274 (0.254)	1.230 (0.247)	1.229 (0.253)
Bill-Paying Hardship			0.932 (0.150)	0.887 (0.142)	0.886 (0.141)
Medical Hardship				1.233 (0.214)	1.232 (0.210)
Housing Quality					1.009 (0.255)
Background Variables					
Household Income	0.998 (0.00876)	0.999 (0.00861)	0.999 (0.00870)	0.999 (0.00869)	0.999 (0.00870)
Household Net Worth	0.996+ (0.00231)	0.996+ (0.00229)	0.996+ (0.00231)	0.996+ (0.00231)	0.996+ (0.00231)
Less than High School	1.178 (0.232)	1.153 (0.230)	1.156 (0.231)	1.145 (0.229)	1.145 (0.229)
Some College	1.314+ (0.204)	1.309+ (0.203)	1.307+ (0.203)	1.307+ (0.202)	1.307+ (0.202)
College	0.974 (0.209)	0.970 (0.208)	0.964 (0.206)	0.969 (0.207)	0.969 (0.207)
Parental Expectations					
Less than High School	2.668 (1.894)	2.608 (1.788)	2.602 (1.798)	2.544 (1.722)	2.547 (1.728)
Some College	0.952 (0.223)	0.951 (0.224)	0.951 (0.223)	0.961 (0.225)	0.960 (0.225)

College	1.000 (0.132)	1.008 (0.134)	1.006 (0.134)	1.007 (0.134)	1.007 (0.134)
Prior School Experience					
Prior Retention	1.782** (0.340)	1.801** (0.343)	1.806** (0.344)	1.786** (0.340)	1.786** (0.340)
Prior Expulsion	1.092 (0.467)	1.075 (0.461)	1.082 (0.466)	1.059 (0.463)	1.059 (0.462)
School Orientation					
Dislikes School	1.298 (0.504)	1.313 (0.507)	1.314 (0.508)	1.299 (0.499)	1.299 (0.499)
Does not Work Hard	1.071 (0.319)	1.073 (0.320)	1.075 (0.321)	1.066 (0.320)	1.067 (0.321)
Disinterested in School	1.479 (0.550)	1.455 (0.531)	1.464 (0.533)	1.479 (0.539)	1.478 (0.539)
N	2,820	2,820	2,820	2,820	2,820

Source: 1996 SIPP; Note: Data are weighted; Standard errors in parentheses; Adjustment variables not appearing above: male, age, black, Hispanic, single parent, metro, region, household size, immigrant headship, extended family household, immigrant extended family household; p<.1 +, p <.05 *, p <.01 **

other measures have a 13.89-percent probability of being retained in grade, much lower than the predicted probability of retention for children in households that report household food insufficiency but are average on other measures, yielding an effect size less than half that of reported household food insufficiency. The associations between other measures of material hardship and in-grade retention maintain the same direction as in previous tables but are weaker than in previous tables. The association between family background and retention, and that between prior retention and retention during the two year period of observation are very similar across models including general household food insufficiency and those including child-specific food insufficiency, suggesting the separateness of these effects from material hardship effects.

The analysis in Table 3.7 suggests that the child-specific food insufficiency measure captures the same dimension of food hardship as the general household food insufficiency measure, but the smaller and weaker effect of child-specific food insufficiency compared with that of general household food insufficiency suggests that the two measures captures food hardship at different levels of severity. To assess this possibility, I construct a joint food insufficiency measure. The joint food insufficiency measure takes on values of zero for households that report neither household nor child-specific food insufficiency, one for households that report either household or child-specific food insufficiency, and two for households that report both household and child-specific food insufficiency. This measure assumes that households that report both household and child-specific food insufficiency experience more food

Table 3.8. Logit Models predicting In-Grade Retention using Joint Food Insufficiency, Parental Expectations, and School Experience & Orientation

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	0.105** (0.0450)	0.102** (0.0443)	0.105** (0.0456)	0.103** (0.0446)	0.103** (0.0446)
Material Hardship					
Food Insufficiency, Joint		1.280* (0.168)	1.307* (0.175)	1.269* (0.173)	1.270* (0.176)
Bill-Paying Hardship			0.903 (0.147)	0.868 (0.141)	0.869 (0.140)
Medical Hardship				1.191 (0.211)	1.191 (0.207)
Housing Quality					0.994 (0.250)
Background Variables					
Household Income	0.998 (0.00876)	0.999 (0.00850)	0.999 (0.00862)	0.999 (0.00862)	0.999 (0.00863)
Household Net Worth	0.996+ (0.00231)	0.996+ (0.00227)	0.996+ (0.00230)	0.996+ (0.00229)	0.996+ (0.00230)
Less than High School	1.178 (0.232)	1.133 (0.226)	1.136 (0.228)	1.128 (0.227)	1.128 (0.227)
Some College	1.314+ (0.204)	1.309+ (0.203)	1.305+ (0.202)	1.305+ (0.202)	1.305+ (0.202)
College	0.974 (0.209)	0.969 (0.207)	0.960 (0.205)	0.965 (0.206)	0.965 (0.206)
Parental Expectations					
Less than High School	2.668 (1.894)	2.476 (1.628)	2.462 (1.633)	2.426 (1.590)	2.424 (1.592)
Some College	0.952 (0.223)	0.951 (0.225)	0.950 (0.224)	0.960 (0.226)	0.960 (0.226)

College	1.000 (0.132)	1.014 (0.135)	1.012 (0.135)	1.012 (0.135)	1.012 (0.135)
Prior School Experience					
Prior Retention	1.782** (0.340)	1.805** (0.344)	1.813** (0.345)	1.796** (0.342)	1.796** (0.342)
Prior Expulsion	1.092 (0.467)	1.076 (0.457)	1.088 (0.464)	1.068 (0.462)	1.069 (0.462)
School Orientation					
Dislikes School	1.298 (0.504)	1.322 (0.507)	1.322 (0.507)	1.309 (0.500)	1.309 (0.500)
Does not Work Hard	1.071 (0.319)	1.069 (0.319)	1.072 (0.320)	1.065 (0.319)	1.065 (0.320)
Disinterested in School	1.479 (0.550)	1.445 (0.523)	1.457 (0.527)	1.469 (0.531)	1.470 (0.532)
N	2,820	2,820	2,820	2,820	2,820

Source: 1996 SIPP; Note: Data are weighted; Standard errors in parentheses; Adjustment variables not appearing above: male, age, black, Hispanic, single parent, metro, region, household size, immigrant headship, extended family household, immigrant extended family household; p<.1 +, p <.05 *, p <.01 **

hardship than do households that report either household food insufficiency or child-specific food insufficiency alone.

Table 3.8 presents logit models that predict in-grade retention, these models are analogous to those presented in Table 3.5 and Table 3.7, for comparison to the effects shown for household and child-specific food insufficiency. The joint food insufficiency measure is predictive of in-grade retention as in the prior tables, the association is stronger than it is for child-specific food insufficiency and approaches the strength of the household food insufficiency effect. The joint measure of food insufficiency is both more strongly predictive of in-grade retention than the child-specific food insufficiency measure and has a larger predictive effect. A child in a household that reports neither household-level nor child-specific food insufficiency has an 11.67-percent probability of being retained over the period of observation, whereas if the household reports one form of food insufficiency the child's probability of retention is 14.13-percent, and if the household reports both household and child-specific food insufficiency, the probability that the child is retained in grade is 17.28-percent, approaching the likelihood of retention for children in household that report food insufficiency as estimated in Table 3.5. These marginal effects suggest that the joint food insufficiency measure captures differences in the severity of food hardship across households that affect retention likelihoods. Beyond the joint food insufficiency measure, the association of other measures in the models with in-grade retention is again largely consistent in size and strength across the models including different measures of food insufficiency, suggesting that the same underlying dimension of food hardship is represented across measures.

While the above analysis indicates that household and child-specific food insufficiency independently and jointly may allow for the determination of different levels of severity of food hardship, selection into the child-specific food insecurity question in the SIPP is also guided by two other food-related questions, which may add further granularity to the determination of the severity of food hardship. I construct a food hardship measure using these two food-related questions in addition to the household and child-specific food insufficiency questions. The measure takes on values ranging from zero to three depending upon responses to the food hardship questions. Households that would be selected into the child-specific food insufficiency question irrespective of their reports of household food sufficiency – those that report that food supplies did not last or that meals were unbalanced – receive one point on the measure, and households receive an additional point for reported household food insufficiency and an additional point for reported child-specific food insufficiency.

Table 3.9 incorporates this measure of food hardship in logit models predicting in-grade retention that are analogous to those presented in the previous tables. The measure of food hardship is predictive of retention across models, mirroring the other measures of food hardship. The strength of the association between the food hardship measure and in-grade retention decreases only slightly with the addition of other measures of material hardship, suggesting that this alternative measure of food hardship captures food hardship and, perhaps, household hardship more generally than

Table 3.9. Logit Models predicting In-Grade Retention using the Food Hardship Measure, Parental Expectations, and School Experience and Orientation

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	0.105** (0.0450)	0.0992** (0.0431)	0.102** (0.0443)	0.0999** (0.0436)	0.0999** (0.0436)
Material Hardship					
Food Insufficiency, Joint		1.145* (0.0938)	1.170* (0.0994)	1.147+ (0.100)	1.147+ (0.103)
Bill-Paying Hardship			0.879 (0.147)	0.852 (0.141)	0.852 (0.139)
Medical Hardship				1.181 (0.211)	1.181 (0.206)
Housing Quality					0.999 (0.255)
Background Variables					
Household Income	0.998 (0.00876)	1.000 (0.00847)	1.000 (0.00857)	1.000 (0.00858)	1.000 (0.00858)
Household Net Worth	0.996+ (0.00231)	0.996+ (0.00226)	0.996+ (0.00229)	0.996+ (0.00229)	0.996+ (0.00229)
Less than High School	1.178 (0.232)	1.127 (0.226)	1.126 (0.227)	1.121 (0.226)	1.121 (0.226)
Some College	1.314+ (0.204)	1.313+ (0.203)	1.308+ (0.203)	1.308+ (0.202)	1.308+ (0.202)
College	0.974 (0.209)	0.977 (0.209)	0.967 (0.206)	0.971 (0.207)	0.971 (0.207)
Parental Expectations					
Less than High School	2.668 (1.894)	2.608 (1.744)	2.598 (1.753)	2.552 (1.701)	2.551 (1.704)
Some College	0.952	0.955	0.955	0.962	0.963

	(0.223)	(0.225)	(0.224)	(0.226)	(0.226)
College	1.000	1.013	1.011	1.011	1.011
	(0.132)	(0.135)	(0.135)	(0.135)	(0.135)
Prior School Experience					
Prior Retention	1.782**	1.788**	1.796**	1.781**	1.781**
	(0.340)	(0.340)	(0.341)	(0.339)	(0.339)
Prior Expulsion	1.092	1.076	1.090	1.071	1.071
	(0.467)	(0.459)	(0.467)	(0.464)	(0.464)
School Orientation					
Dislikes School	1.298	1.313	1.313	1.301	1.301
	(0.504)	(0.503)	(0.503)	(0.496)	(0.496)
Does not Work Hard	1.071	1.075	1.080	1.073	1.073
	(0.319)	(0.319)	(0.321)	(0.320)	(0.321)
Disinterested in School	1.479	1.425	1.436	1.451	1.451
	(0.550)	(0.519)	(0.522)	(0.527)	(0.528)
<hr/>					
N	2,820	2,820	2,820	2,820	2,820

Source: 1996 SIPP; Note: Data are weighted; Standard errors in parentheses; Adjustment variables not appearing above: male, age, black, Hispanic, single parent, metro, region, household size, immigrant headship, extended family household, immigrant extended family household; p<.1 *, p <.05 *, p <.01 **

do the more specific food insufficiency measures. Nonetheless, food hardship is associated with an increased likelihood of in-grade retention over the two years that the sample is observed. For children in otherwise average households, increasing values on the food hardship measure correspond to greater likelihood of in-grade retention, a child in such a household that reports no food hardship has a 11.28-percent probability of being retained, while a child in a household that reports household and child-specific food insufficiency in addition to either unbalanced meals or food supplies that did not last has a 16.09-percent probability of being retained, fairly close to the predicted probability for the most severely food insufficient estimated from the previous table's models. This suggests that a similar dimension of food hardship is captured across the two measures. In model 5, the associations between other material hardship measures and adjustment measures, and in-grade retention are quite similar to those in previous tables, indicating that similar dynamics are captured across food hardship measures.

DISCUSSION

These analyses take advantage of multiple measures of material hardship, incorporating material hardship alongside measures of family background to more thoroughly capture students' backgrounds as they affect the experience of in-grade retention. Starting from the established consequence of family background for the educational and later life outcomes of children, grade retention is examined as a phenomenon of particular consequence through its effects on subsequent academic performance, tracking and attainment, all of which have cumulative effects in the

labor market and on life chances more broadly. The richness of the SIPP material hardship measures is unique in that it allows for the assessment of multiple rather than a single dimension of material hardship and a more comprehensive analysis of this dimension of family background as it affects the likelihood of in-grade retention jointly with more common measures of background.

These analyses show that food-related hardship is associated with a greater likelihood of in-grade retention, while other forms of material hardship have much smaller and weaker associations with the retention. The stability of the association between family background measures and in-grade retention with the addition of material hardship measures indicates that the effect of material hardship, and food hardship particularly, on the likelihood of retention operates separately from that of other measures of family background. The predictive effect of food hardship also persists across the set of food hardship measures constructed from multiple food-related questions included in the Adult Wellbeing topical module, suggesting both the robustness of the effect of food hardship on the likelihood of retention and that the effect differs with the severity of households' food hardship.

Surely, all forms of material hardship constitute a departure from the rhythm of households' day-to-day lives, but food hardship appears to result in greater departures from usual life. Food hardship can directly affect the experience of hunger, which itself affects children's cognitive functioning (Bryan, et al. 2004; Murphy, et al. 2008; Pollitt, Cueto and Jacoby 1998), and by extension impact their academic performance and teachers' retention decisions. Similarly, inadequate intake of food impacts immune function and the incidence of chronic illness among children (Cook, et al.

2013; Dixon, Winkleby and Radimer 2001; Weinreb, et al 2002), both of which can affect children's school attendance and, by extension, their learning and test scores. Food hardship also corresponds to increased behavioral problems among children (Slack and Yoo 2005; Whitaker, Phillips and Orzol 2006), which is, at least in part, attributable to the increased harshness of parenting that accompanies food hardship (Conger, et al. 1997; Hanson, et al. 1997; Korenman, et al. 1997). As behavior is a major determinant of teachers' assessments of students (Farkas, et al. 1990), the behavioral consequences of food hardship also impact retention decisions.

Food hardship can also affect the transfer of human capital from parents to children. Coleman (1990) proposes that the social relations inherent to family life allow children to access adults' human capital and benefit from the accumulation of that human capital over the term of a lifetime. As parent's depression and anxiety are affected by food insecurity (Heflin, Siefert and Williams 2005), and as when faced with food insufficiency parents spend a greater amount of time outside of the home in an effort to procure more food (Hamelin, Habich and Beaudry 1999), these factors can combine with the increased harshness of parenting to affect the character and frequency of interaction between adults and children in a household such that the transfer of human capital from adult to child is impeded. For example, a parent may not be in the home as often to aid a child with school work, or a child faced with a depressed parent or a parent-child relationship that has increased in harshness may seek help with school work less frequently. In either example the practical implication is that the change in the character of the parent-child relationship serves to limit the amount of human capital that can be transferred to the child through less frequent or

less intense engagement with parents in learning activities. Applied to in-grade retention, such a change in the parent-child relationship can negatively affect the child's learning trajectory and, thereby, their performance on assessments that inform retention decisions.

This analysis faces some limitations. The SIPP data do not as comprehensively measure aspects of students' educational history as do some other datasets, which include more measures of ability, achievement and behavior such as grade point averages, test scores, and parent and teacher reports of student behavior. The data also lack repeat measures of both the causal and outcome measures used in the analysis of material hardship, which would allow for an examination of both the persistence of effects and the effect of repeated or maintained material hardship. While these certainly are limitations, the measures of material hardship that the data include permit a comparably thorough examination of the effects of multiple dimensions of material hardship alongside those of more commonly acknowledged measures of variation in family background.

Whether the relationship between material hardship and grade retention explored here extends to other educational processes is beyond these data. However, owing to the pervasiveness of food insecurity measures in a number of other datasets and the robustness of food hardship as a predictor of grade retention, other data present the opportunity to explore the effects of food insecurity and insufficiency, and to a lesser extent material hardship more generally, in further detail. Similar to the way in which episodic and persistent poverty are argued to differentially affect lifecourse trajectories, the regularity of material hardship may similarly impact

educational attainment and other outcomes in consequential ways. The inclusion of material hardship measures in surveys and their subsequent analysis as a component of family background is a sizeable improvement over the inference of hardship from measures of income and proves a profitable addition to the present analysis. For these reasons, researchers should continue to explore the effects arising from the underexplored dimension of background represented by material hardship.

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CHAPTER 4

MATERIAL HARDSHIP AND GRADE RETENTION ACROSS 1996 AND 2004 PANELS OF THE SURVEY OF INCOME AND PROGRAM PARTICIPATION

ABSTRACT

Earnings and wealth inequality in the United States are characterized by a long-run trend of increase dating from the 1970s. At the same time, earnings have become increasingly differentiated according to individuals' level of educational attainment. I focus on in-grade retention among elementary students as an outcome of interest given its consequence for subsequent tracking decisions, high school dropout, and for labor market outcomes. This study builds upon the prior chapter's finding, that material hardship – particularly food insecurity – is predictive of grade retention among elementary students, by comparing the effect of material hardship on in-grade retention in the late-1990s with that in the-mid 2000s. The data examined here cover the periods early in and after sizeable shifts in the policy environment – allowing enough time for the policies' provisions to take effect. These policy changes, welfare reform and the widespread adoption of high-stakes testing, have the capacity to affect both the experience of material hardship and the likelihood of in-grade retention through the variation in state policy that they enable. Analysis finds the effect of material hardship on the likelihood of retention to be consistent over time, with household food insufficiency and hardship predicting retention across both 1996 and 2004 panels of the SIPP. Further analysis suggests that policy changes that affected the relative level of state welfare benefits impact the likelihood of in-grade retention, but have little impact on the relationship between material hardship and the likelihood of in-grade retention.

INTRODUCTION

The labor market of recent decades is characterized by a trend of increasing income inequality and an increase in service sector and other forms of more contingent employment. These changes are most clearly reflected in the growth of real wages among more skilled and educated workers, and the stagnation of wages among lower-skill and less educated workers (see CBO 2010; Gottschalk and Smeeding 1997; Piketty and Saez 2003, for example). In the context of this trend of increasing inequality, and the increase in the instability of lower-income workers' employment and general labor force attachment, the question arises: what has been the impact of these increases on the incidence of hardship?

A sizeable body of research indicates that financial hardship, as measured by the share individuals and households with incomes below or near the poverty threshold has increased. There is not a body of research that addresses this question as it concerns the trend in material hardship over this period – in part for relative lack of data covering material hardship. To the extent that material hardship is financially determined, the incidence of material hardship may increase in a manner similar to that in which income and wealth inequality are observed to increase. Material hardship may similarly increase by virtue of decrease in the stability of the employment and labor market attachment of workers in lower-wage jobs and workers with lower levels of human capital. Further, the incidence of material hardship may be further affected by changes in the constellation of regulations determining eligibility for and the level of benefits of programs affected by the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA).

Following from these gaps in our knowledge of how changes in hardship relate to change in the distribution of income, I seek to answer the following questions.

First, what do the data demonstrate about change in the incidence of material hardship in the context of increasing income inequality across panels? How does the relationship between material hardship and the likelihood of in-grade retention change over time, and how is this relationship affected by change in the policy environment faced by households, particularly state-level variation in policy governing social program benefits and eligibility?

If reforms affect the level of resources that individuals and households have at their disposal – through changes in eligibility criteria and the calculation of benefits, through the imposition of time limits on receipt, and through the increase in child care and transportation costs pursuant to employment as required by PRWORA – then change in the incidence of hardship may result. If reforms similarly affect the amount of time available to households that might otherwise be used to meet household needs – through work and training requirements – then change in the incidence of hardship may result.

Reform of the rules governing welfare receipt is likely to affect those who already face more numerous disadvantages – those at the margins of eligibility under pre-reform rules. Following the logic of theories of cumulative and overlapping disadvantage, and the prospect that welfare reforms are likely to affect individuals who already face a number of disadvantages, those most affected by welfare reform may face greater detriment given the cumulative or multiplicative nature of

disadvantages and the additional disadvantages generated by the reform of welfare rules.

The data used to examine these questions are drawn from the Survey of Income and Program Participation (SIPP) and are supplemented with measures of state welfare program rules drawn from the Urban Institute's Welfare Rules Database.

After reviewing previous work, the analysis proceeds by, first, assessing the incidence of hardship across the 1996 panel and later 2004 panel of the SIPP. Next, I examine the change in the relationship between material hardship and in-grade retention by analyzing pooled data drawn from the 1996 and 2004 panels of the SIPP. Third, I assesses whether variation in state TANF policy precipitated by PRWORA affects the likelihood of in-grade retention across children or the relationship between material hardship and grade retention.

FAMILY BACKGROUND

Early sociological studies of the intergenerational mobility process found a consistent association between parental or family socioeconomic status and the later life outcomes of children (Blau and Duncan 1967; Featherman and Hauser 1978; Sewell, Haller and Portes 1969; Sewell and Hauser, 1975). Recent research on intergenerational mobility, which does not rely on retrospective reports of family status, has reaffirmed this relationship between family background and attainment (Brooks-Gunn and Duncan 1997; Haveman and Wolfe 1994; Hill and Duncan 1987). Contemporary research also investigates more concurrent child outcomes, finding family background to be predictive of poorer child health (Aber, et al. 1997; Klerman

1991), more hazardous living conditions (McLoyd 1998), and poorer performance in school (Smith, Brooks-Gunn and Keblanov 1997), among others.

Indeed, family income is one of the chief predictors of both eventual outcomes and trajectories in schooling – education being a force that has great influence in structuring eventual outcomes. In replication analysis across multiple datasets, Duncan and Brooks-Gunn (1997) find that family income is the factor that is most strongly predictive of children’s measured academic ability and achievement, while it is comparably less predictive of other outcomes. While associated with family income, parental educational attainment also impacts students’ ability and achievement through the educational and career expectations communicated to students (Alexander and Eckland 1975; Sewell, Haller and Portes 1969), and the cognitive stimulation provided by home environments (Guo 1998; Guo and Harris 2000). These expectations and cognitive stimulation serve to support children’s learning and ultimately their attainment (Duncan, Featherman and Duncan 1972), and the reinforcement of expectations and rewarding of behavior consistent therewith are necessary to facilitate the realization of those expectations (Astone and McLanahan 1991). To the extent that consistency in home environment and parental interaction benefits students through the reinforcement and support of educational expectations, material hardship captures variation with the potential to affect educational trajectories in home environments that appear comparably stable when considering more common components of household background.

MATERIAL HARDSHIP

Poverty is popularly conceived of in terms of lived experience, inability or difficulty in satisfying basic needs often fit into this conception. In practice, however, poverty is analyzed in terms of measured income. In principle, measures of poverty identify individuals and households whose consumption – as inferred from their income – falls below a popularly or politically acceptable level. This is most apparent in the indexing of the official United States poverty threshold to the market price of a set of goods. These measures do not, however, capture the dimension of material deprivation often conceived of alongside low income (Sen 1979; Slesnick 1994). Rather than assume that a given level of income is successfully translated into a minimally adequate level of consumption, measures of material hardship assess whether households experience events and circumstances that correspond to lower than adequate levels of consumption.

The measurement of material hardship in the United States only began rather recently with Mayer and Jencks' (1989) analysis of hardship among Chicago residents based upon two surveys that include measures of hardship. Considering the incidence of material hardships – the sufficiency of food eaten in the household, housing conditions and crowding, ability to meet expenses, eviction, utility services disconnection, health insurance coverage, and medical and dental care – they find that only 24-percent of the variation in families' experience of material hardship is explained by differences in socioeconomic status. In years since, nationally representative surveys have incorporated measures of material hardship, analyses based upon these data have yielded similar findings, showing only a moderate

association between income and material hardship (Beverley 2001; Boushey, et al. 2001; Mayer 1997; Rector, et al. 1999).

Material hardship is not as strongly associated with level of income or change in income as popular conception would suggest, but a moderate association with household income does exist. From lower to higher quintiles of the income distribution the incidence of hardship does decrease, reflecting this moderate relationship (Sullivan, Turner and Danziger 2008). Similarly, about 13-percent of non-poor families report at least one form of material hardship, while slightly more than half of poor families experience at least one form of material hardship (Federman, et al. 1996). In spite of this gross relationship and the relative prevalence of hardship among the poor, Short's (2005) comparison of material hardship measures to the official poverty measure, a relative poverty measure and an experimental poverty measure indicates that the population that experiences material hardship is not well captured by any of the poverty measures. This finding echoes a point that is frequently raised in research on material hardship, that the population that experiences material hardship and the population that experiences income poverty are two distinct groups (Beverly 1999; Edin and Lein 1997; Rector, Johnson and Youssef 1999).

The observation that those facing hardship and those facing low income are distinct groups may, in part, arise from the rather weak correspondence between income and consumption (Mayer 1996; Meyer and Sullivan 2003). This is reflected by the observation that poverty rates are lower when poverty is measured via consumption (Selsnick, 1993). Consumption is tied to material hardship insofar as consumption in different domains, some corresponding to measures of material

hardship, can become rival when resources are constrained. Households with the same level of resources may differ in the decisions, behaviors and strategies that are employed, potentially resulting in differences in the experience of material hardship or the satisfaction of basic needs. The present analysis explores the way in which the dynamics underlying the experience of material hardship, alongside the experience of hardship itself, combines with family background to affect children's educational trajectories.

Material Hardship and Education

As with the study of material hardship effects generally, there is rather limited knowledge of the relationship between material hardship and educational outcomes. Food-related hardship is the most frequently individually examined dimension of material hardship both generally and in relation to education. There are two reasons for this. First, the development of the USDA Food Security Survey Module has precipitated the inclusion of measures of food-related hardship in more surveys than other dimensions of material hardship. And, second, there is a notable focus on food-related hardship in the United States, popularly and otherwise (Heflin, Sandberg and Rafail 2009).

One of the most common associations found with respect to food insecurity is that of greater reported behavioral issues in children (Dunifon and Kowaleski-Jones 2003; Kleinman, et al. 1998; Slack and Yoo 2005). Bearing more directly on educational outcomes, food insecurity is also associated with lower psychometric assessment scores (Jyoti, Frongillo and Jones 2005). Food insufficiency is also

associated with a greater likelihood of having previously been retained in grade or suspended from school, in addition to behavioral problems and lower test scores (Alaimo, Olson and Frongillo 2001). Together these findings suggest that food insecurity may be predictive of lower levels of academic achievement and classroom behavior that increase the likelihood that children will be retained in grade.

While few analyses consider a range of material hardship rather than one or two dimensions of hardship, fewer still concern themselves with child outcomes. Gershoff and colleagues (2007) consider a range of material hardships and associated outcomes for six year old students and find a latent index of material hardship to be associated with lower measured cognitive ability and reports of poorer behavior. Zilanawala and Pilkauskas (2012) find that among five year old children difficulty paying bills, utility service disconnection, and housing instability are related to child behavior. They also find a latent index of hardship is more strongly related to poor child behavior than the individual dimensions. This suggests that multidimensional hardship – measured as a latent index or as multiple dimensions of hardship – is consequential, at least in early years, for educational outcomes.

GRADE RETENTION

Grade retention is commonplace in the United States, approximately 13 percent of students have been retained by the time that they reach the 9th grade (Department of Education 2012). However, there is substantial variation in the incidence of prior retention by race and ethnicity, black students experience the most retention, 24.7-percent have been retained by 9th grade, while 15.3 percent of Hispanic students, 9.5

percent of non-Hispanic white students, and 3.3 percent of Asian students have been retained by 9th grade. This suggests that income, in combination with race and ethnicity, in part structures grade retention as these differences in retention experiences follow the relative group ranking of race-ethnicity groups by household income.

Most analyses find an association between grade retention and both lower levels of academic performance and subsequent educational attainment. Retention is associated, for example, with reductions in reading and math scores – of 15- and 20 percent respectively – in the years immediately following retention (Hong and Raudenbusch 2005). Jimerson's (2001) meta-analysis of 20 studies finds most to support the association of retention with detrimental outcomes, concluding that – at best – grade retention does not provide any greater benefit to retained students than would continuous promotion. This assessment is supported by Hong and Yu's (2007) finding, one of the more favorable toward retention, that the negative effects of kindergarten retention on test scores fade over a five year period, while the impacts of retention in first grade do not diminish in subsequent years – certainly, in neither case is any advantage conferred to retained students.

While the effect of early retention on test scores may diminish over time in some cases, the negative impacts of retention on student behavior and school engagement persist (Hong and Yu 2008; Jimerson 1999; Roderick 1994). This is of particular consequence as classroom behavior is a sizeable determinant of teachers' assessments of students (Farkas, et al. 1990), and is itself associated with retention (Alexander, et al. 2003).

If, in the best case, negative impacts on school performance eventually diminish, the early school experiences of children are likely to persist in other ways. One way that retention effects can persist is through skill group tracking in school. Tracking decisions are strongly influenced by students' history of retention (Dauber, Alexander, and Entwisle 1996), the implications of which are compounded by the stability of students' track placement over time (Gamoran 1989; Hallinan 1992). Moreover, eventual educational and occupational attainment are predicted by student's track placement (Kerckhoff 1993; Kerckhoff, Hanley and Glennie 2001). The long-term effects of retention are also apparent in the association between retention and dropout in both middle school (Rumberger 1995) and high school (Alexander, et al. 1997; Jimmerson, et al 2002; Roderick 1994; Stearns, et al. 2007). When considered from the perspective of cumulative disadvantage, the seemingly small disadvantages that result from initial tracking decisions, as influenced by the experience of retention, earlier in a child's educational career may be compounded by poorer classroom behavior and engagement, lower achievement, and the persistence of lower track placement.

CHANGE IN THE POLICY ENVIRONMENT

Two sets of major policy changes took place between the mid-1990s and mid-2000s. In 1996, PRWORA passed, precipitating substantial change in the policies governing federal cash assistance programs – most notably Aid to Family with Dependent Children (AFDC) was succeeded by Temporary Assistance for Needy Families (TANF), the program established by PRWORA. Under TANF, states are

given discretion to set their own criteria for the determination of benefit eligibility, the level of benefits for which families are eligible and to limit the periods of time for which an individual may receive benefits. A second major set of policy changes accompanied the passage of the No Child Left Behind Act (NCLB) in 2001. Under NCLB states are given discretion in setting mandated performance goals for their students and establishing annual testing to measure progress toward those goals, but not nearly the latitude that states are given in setting requirements and standards for welfare receipt under PRWORA.

Change in Social Policy

A number of provisions were included in PRWORA, the two that affected the greatest number of people are (1) a requirement that individuals begin working after having received benefits for two years, where failure to begin working leads to sanctions that limit benefits; and (2) a requirement that individuals may only receive benefits paid with federal funds for five years, in total, during their lifetime. States were given broad discretion in determining how these requirements were applied, what level of benefits would be made available to recipients and for what length of time, and what the standards by which eligibility and benefit levels would be determined.

Research following from the implementation of PRWORA reforms suggests that some reforms have had an adverse effect on recipients' life chances. Kalil, Seefeldt & Wang (2002) show that sanctions predict reports of material hardship, individuals' perception of hardship, and individuals' engagement in activities intended

to offset or limit hardships such as selling possessions, stealing necessary items from stores, and engaging in illegal activity. Wu and colleagues (2006), however, find that incidents of sanctioning are often short-lived, with individuals typically returning to receipt of full benefits; they also find, though, that recipients who are most disadvantaged in the labor market are also those at greatest risk of sanctioning.

The ability of welfare leavers to successfully transition into permanent employment is not settled. There is no question that welfare reform led to higher rates of employment among recipients, particularly among less-skilled women and single mothers, however, the extent to which absolute income and standards of living improved is questioned as some portion of welfare leavers faced lower levels of total incomes after transitioning to work (Alfred 2005; Blank 2002; Moffitt 2008). Moreover, the employment welfare leavers typically fail to find steady employment. Wu, Cancian and Meyer (2008) show that those transitioning from welfare to work follow distinct trajectories: although some recipients transition into stable employment, others transition into stable unemployment, and the majority of leavers transition into unstable employment.

In fact, a body of research has grown around questions of whether individuals benefit by moving from welfare to work and what kinds of difficulties individuals face in making the transition. A common sentiment in this body of work is that neither the level of welfare payments nor the kinds of jobs available to recipients are sufficient to meet families' needs (Johnson and Corcoran 2003; Litte, et al. 2003). This is highlighted by the fact that working mothers often face larger budget deficits than do similar mothers who receive welfare benefits (Mullan-Harris 1996). The unmet need

of welfare leavers is often met through informal labor, and local government, community and social support (Edin & Lein 1993; Livermore, et al. 2011). These questions of families' ability to meet need in a post-PRWORA context bear on the impacts of material hardships as they become either more commonplace or more severe.

There is reason to believe that material hardship and its impacts may be more acute in the 2004 panel, insofar as the circumstances faced by welfare leavers deteriorated after welfare reform (Acs and Loprest 2007; Wu, Cancian and Meyer 2008). At the same time, Danziger and colleagues (2002) find that welfare leavers and non-leavers report a similar number of hardships, despite differences in income. This implies that the effects of material hardship may differ very little across 1996 and 2004 panels. Additionally, after accounting for human capital, differences may not appear across panels as the research highlighted above finds individuals' level of human capital to be very consequential for post-welfare outcomes.

Change in the policy environment that affects welfare regulations may similarly affect the incidence and effects of hardship across the 1996 and 2004 panels of the SIPP as state policies change. If less generous state policy makes it more difficult for households to meet necessary expenses, household members must generate supplementary income. If individuals' efforts to generate supplementary income or otherwise offset material hardships that emerge from a lack of resources result in an increase in their absence from the household, they may be less able to support children's learning and prosocial behavior. Moreover, increases in material hardship may negatively affect parents' wellbeing and interaction with children

(Ashibi and O’Neal 2007; Ettner 1996; Holl, et al. 1995, Newacheck, et al. 1998).

Similarly, if variation in policy corresponds to increases in material hardship, material hardship may itself exert a negative influence on children’s health (Ashibi and O’Neal 2007; Frank, et al. 2010; Yoo, Slack and Holl 2007), behavior (Gershoff, et al. 2007; Zilanawala and Pilkauskas 2012) and learning (Alaimo, Olson and Frongillo, 2001; Jyoti, Frongillo and Jones, 2005), and thereby their success in school as measured by in-grade retention.

DATA

To consider the effect of material hardship on in-grade retention, I use the 1996 and 2004 panels of the Survey of Income and Program Participation (SIPP), a rotating panel survey that collects information about income, labor force participation, and program participation and eligibility. In the collection of SIPP data, a core set of questions about income, labor force participation and program participation is asked at every survey wave, while an additional set of questions – topical modules – are included alongside the core set of questions. The content of topical modules changes from wave to wave, however, while the questions included as part of the topical module differ from one survey wave to the next sets of questions are repeated regularly across the panel.

The two panels of the SIPP used here are timed such that the 1996 panel data are less affected by the implementation of PRWORA provisions, while the 2004 panel is sufficiently removed from PRWORA that the provisions have had time to take effect and further state-level changes in policy have had time to occur. To this point,

the average adjusted maximum level of benefits available to a family of three across states decreased by almost 80 dollars inflation-adjusted 2006 dollars between the 1996 and 2004 panels as benefits declined in all but five states. These five states increased benefits by an average of 4 percent (13 dollars) as compared to the 16 percent (90 dollar) average decrease in benefits among other states. A number of states were experimenting with alternative AFDC rules prior to and through the passage of PRWORA as permitted by the Department of Health and Human Services, but the vast majority of states – including those that had previously experimented with alternative rules – decreased maximum benefit levels further in the years after PROWRA was instituted.

The sample is drawn from both panels, consisting of students enrolled in primary school in the wave during which the ‘child wellbeing’ topical module is first included in the panel and for whom there is sufficient information in subsequent panel waves to determine the experience of household material hardship and experiences of retention by the second asking of the ‘child wellbeing’ topical module. The sample is limited to students who are enrolled in kindergarten through sixth grade at the time that retention histories are first taken. While the data used to construct the variables used for analysis are available for a broader set of students, I limit the sample to elementary school students as the SIPP lacks measures of achievement and aptitude, which may be more consequential in administrative decisions, such as retention, as students progress to higher levels in school.

Outcome Measure

In-grade retention. The child wellbeing topical module includes questions about children's current enrollment and experiences of prior in-grade retention. The child wellbeing module is included in waves 6 and 12 of the 1996 panel of the SIPP and waves 3 and 8 of the 2004 panel, and includes questions about children's educational histories and orientation toward school, as well as parental expectations for students' educational attainment. Students are counted as having repeated a grade if at the second asking of the child wellbeing topical module they are reported to have repeated the grade in which they are enrolled at the first asking of the topical module or a grade subsequent thereto, provided that they were not previously reported to have repeated the grade.⁹

Policy Environment Measures

I construct two sets of policy measures to assess the impact of food hardship focused policy interventions on both the likelihood of in-grade retention and the relationship between food hardship and in-grade retention and, second, to assess the effect of state-level differences in social policy rules – specifically those governing TANF – on the likelihood of retention how those effects moderate the associations between other measures and children's retention.

To capture food hardship focused policy interventions I construct three measures. The first measure is a simple dichotomous indicator of children's membership in a household that participates in the food stamp program. The second

⁹ Students that are reported to have repeated the grade in which they are enrolled at the first child wellbeing topical module and who subsequently repeat the grade again cannot be identified using these measures. Accordingly, a small number of retentions may not be identified.

measure reflects the dollar amount, in 2006 dollars, of the food stamp program benefits that children's households receive. And the third measure is a dichotomous indicator of children's participation in the school lunch program.

I construct three measures to assess the impacts of variation in state social policy rules. Each measure is based on the Urban Institute's Welfare Rules Database. The first measure is the maximum level of benefits available to a family of three people with no income under state TANF rules. This measure captures variation in the relative generosity or stinginess of states' respective benefits levels. The second measure is a count of the number months that an individual may receive TANF benefits over their lifetime as specified by state law. While PRWORA stipulates that individual adults are limited to 60 months of federally funded TANF benefit receipt over their lifetime, states have a great deal of latitude in setting their own time limits, some states have time limits as short as 24 months. The final policy measure reports the maximum value of assets that a family of three is permitted to hold while maintaining eligibility for TANF benefits. States do not count vehicles owned by households toward the asset limit, generally meaning that asset limits apply to savings and similar conventionally banked forms of asset holding. While these measures capture state rules that are likely to affect the experience of in-grade retention independently through their effects on the amount of support that is provided to families, they may similarly be indicative of broader characteristics of state and local cultural environments that extend as far as local schooling and retention policy.

Hardship Measures

Hardship measures are constructed from data obtained from the ‘adult wellbeing’ topical module, included in wave 8 of the 1996 SIPP and wave 5 of the 2004 SIPP. The SIPP hardship measures correspond to common notions surrounding the experience of low income, as evidenced by means-tested government programs that target the dimensions of housing quality, medical care, bill paying, and food sufficiency. The inclusion of these measures, alongside measures of income, captures the constellation of circumstances that reflect the lived experience of disadvantages.

I construct five measures of household material hardship that capture four dimensions of material hardship – housing conditions, medical care, bill paying and food sufficiency – that are frequently used to assess hardship (Heflin, Sandberg & Rafail 2009; Mayer and Jencks 1989; Rector, et al. 1999; Short 2005). I count households as experiencing housing hardship if the head of the household reports that condition of the home is such that they would like to move to another home. I measure medical hardship using reports that in the previous 12 months at least one person in the household was unable to receive medical or dental care when it was needed. I consider households that report failure to pay utilities bills or the full amount of rent in the previous 12 months to have experienced bill-paying hardship. I construct a measure of food insufficiency using reports of the adequacy of the quantity of food eaten in the household over the previous four months, those households that characterize the food eaten in the household as “sometimes not enough to eat” or “often not enough to eat” are considered to be food insufficient. A similar question, specific to the sufficiency of food eaten by children in the household is used to

construct an indicator of child-specific food insufficiency for those children reported to sometimes or often not have enough to eat.

Following the previous paper, I construct two additional measures of food hardship. First, I construct a joint measure of food insufficiency from the same measures as are used to construct the household and child-specific food insufficiency indicators. This measure takes a value of 0 if respondents report that neither the household nor children in the household face food insufficiency, takes a value of 1 if respondents report either household or child-specific food insufficiency, and takes a value of 2 if respondents indicate both household and child-specific food insufficiency. A second measure captures household food hardship more generally, using two measures in addition to the two measures used to construct the food insufficiency measures discussed previously. After respondents are asked to characterize the quantity of food eaten in the household – the measure used to construct the indicator of household food insufficiency – they are asked two additional questions about the household’s supply of food. All households are first asked whether it was never, sometimes or often true that in the previous four month period the food that they bought did not last and the household did not have enough money to buy more. All households are then asked whether, over the same four month period, they never, sometimes or often were unable to afford to eat balanced meals. Households that include children and have answered affirmatively to any of these three questions are then asked to characterize the sufficiency of the food eaten by children in the household over the previous four month period, the measure from which the indicator of child-specific food insufficiency is constructed. The food

hardship measure constructed from these four survey measures takes values of 0 to 3 depending upon respondents' responses to the food hardship questions. Households that report that food supplies did not last or that meals were unbalanced receive one point on the measure, households receive an additional point each for reports of household-level and for child-specific food insufficiency.

Adjustment Measures

The analyses adjust for individual and household characteristics that may affect the association between material hardship and in-grade retention, including household income and net worth (in 2006 dollars), parental educational attainment, single parent family status, and region. Additionally, I adjust for students' reported race, sex and age.

Compared to other datasets, the SIPP presents some challenges when used to assess educational outcomes. One of these is a relative lack of measures of prior academic performance, I limit the sample to students in primary grades given the likelihood that in earlier grades shorter academic histories are of less consequence for retention decisions in an effort to limit the complications introduced by a lack of performance history. I also include two indicators of prior school experience available in the SIPP, prior expulsion and prior in-grade retention – the later having established consequence for achievement trajectories (Moller, et. al 2006). Additionally, students' orientation toward school is captured by parental reports of students' level of interest in school, liking for school, and effort put toward school work. Finally, parental

expectations are captured by parental reports of the highest level of educational they expect their children to complete.

Analytic Strategy

First, I present descriptive statistics for the 1996 and 2004 samples by poverty status and experience of material hardship. I then estimate logit models that predict in-grade retention using measures of food hardship, incorporating a panel indicator and panel-food hardship interaction term to assess panel effects and differences in food hardship effects across panels. I also include measures of food stamp program and school lunch program participation to assess the impact of these programs on both the likelihood of in-grade retention and the relationship between food hardship and in-grade retention.

Finally, I estimate models that predict retention and state-level measures of the generosity and strictness of state TANF rules to assess the impact of changes following from the implementation of PRWORA.

RESULTS

Descriptive Analysis

Table 4.1 presents descriptive statistics for the sample by panel and household income relative to the official poverty threshold. The share of households reporting any hardship is comparable across panels and levels of income, as is the average number of hardships that households report. Following from the moderate association between income and material hardship, the share of households that report hardship is

Table 4.1. Descriptive Statistics by Household Income Relative to Poverty Threshold

	Full Sample		Below Poverty		1-2x Poverty		Above 2x Poverty	
	1996	2004	1996	2004	1996	2004	1996	2004
Any Hardship	0.35	0.33	0.58	0.60	0.45	0.46	0.21	0.19
Number of Hardships	0.64	0.63	1.26	1.26	0.86	0.90	0.30	0.29
Food Insufficiency (HH)	0.04	0.03	0.11	0.08	0.04	0.06	0.01	0.01
Food Insufficiency (Child)	0.08	0.06	0.20	0.13	0.10	0.09	0.02	0.02
Bill Paying Hardship	0.20	0.21	0.38	0.42	0.28	0.28	0.09	0.11
Medical Hardship	0.14	0.14	0.22	0.22	0.19	0.23	0.07	0.08
Housing Hardship	0.07	0.05	0.13	0.12	0.09	0.08	0.03	0.02
Less Than High School	0.12	0.09	0.34	0.25	0.15	0.14	0.02	0.02
High School	0.27	0.19	0.36	0.30	0.38	0.25	0.19	0.12
Some College	0.34	0.42	0.23	0.37	0.34	0.47	0.37	0.41
College	0.27	0.30	0.07	0.09	0.13	0.14	0.41	0.45
Black	0.17	0.16	0.34	0.33	0.20	0.18	0.09	0.09
Hispanic	0.15	0.17	0.25	0.23	0.20	0.26	0.09	0.10
Single Parent Household	0.30	0.32	0.59	0.63	0.34	0.39	0.17	0.18
Previously Retained	0.07	0.09	0.12	0.15	0.09	0.10	0.05	0.06
Previously Expelled	0.02	0.01	0.03	0.01	0.03	0.01	0.01	0.00
Dislikes School	0.04	0.04	0.03	0.05	0.05	0.05	0.03	0.03
Disinterested in School	0.04	0.04	0.05	0.05	0.05	0.05	0.03	0.03
Does not Work Hard	0.03	0.02	0.04	0.04	0.03	0.03	0.03	0.02
High School Expected	0.31	0.32	0.33	0.34	0.28	0.32	0.33	0.34
Some College Expected	0.08	0.05	0.14	0.04	0.09	0.06	0.06	0.04
College Expected	0.61	0.63	0.53	0.62	0.61	0.62	0.61	0.63
Monthly Household Income	3543	3798	679	675	1804	1847	5494	5707
Household Net Worth	97332	111489	24874	29628	48422	44534	149184	168424
N	2820	7609	557	1453	765	1869	1498	4287

Source: 1996 & 2004 SIPP

greater among lower income groups, and the average number of hardships reported is greater among lower income groups, as well.

The share of households that report food insufficiency is slightly lower in the 2004 panel. This disparity is most marked among poor households, which have greater differences in the incidence of household and child-specific food insufficiency across panels while higher income households better approximate each other's incidence of food insufficiency over time. In contrast, there is a slightly greater incidence of bill paying hardship among households in the 2004 panel at all levels of income. This may be viewed as consistent with poor households having more difficulty meeting financial obligations as a result of decrease in the generosity of state benefit rules or increases in the barriers to benefit receipt over the term.

Parental education varies across poverty status in the same pattern as material hardship, reflecting more disadvantage among lower income households. To some extent, expectations about children's educational attainment do as well, although all groups seem to be converging toward a modal expectation that children will complete college as expectations for college completion increase across panels and other expectations decrease. While there is a sizeable decline in the share of children expected to complete some college across panels, this difference is more than offset by the increase in the share of children that are expected to complete college.

Among other notable changes across panels, poor households include a greater share of single parents and their children in the 2004 panel. Consistent with broader trends, households are better educated in 2004 than in 1996, and potentially speaking

to different labor market dynamics, the share of households with college-educated members is greater in 2004.

Table 4.2 next considers households by panel and number of hardships reported. The categories for number of hardships reported is constructed from reports of bill paying hardship, medical hardship, housing hardship and household food insufficiency, as such, a small number of households that do not report household food insufficiency do report child-specific food insufficiency as is apparent in the table. Consistent with the moderate association between income and material hardship, households that do not report any forms of material hardship have both greater incomes and higher net worth, while households that report progressively more material hardships have lower levels of income and net worth. Notably, and reflective of the only moderate association between income and material hardship, the difference in income between households that report different numbers of hardships is not particularly marked, suggesting that sufficiently high levels of household income are protective against material hardship while differences in household income at lower levels are less systematically related to the experience of hardship.

The education of household members follows a similar pattern as do income and net worth, as better educated households are less prevalent among households that report any or multiple hardships, while less well-educated households are more prevalent among households that report hardship. Similarly, black and Hispanic children are disproportionately represented among children living in households that report hardship. Despite other differences, parental expectations for children's educational attainment are quite similar across households that report different

Table 4.2. Descriptive Statistics by Number of Material Hardships Reported

	No Hardships		1 Hardship		2 Hardships		3 Hardships		4 Hardships	
	1996	2004	1996	2004	1996	2004	1996	2004	1996	2004
Food Insufficiency (HH)	0.00	0.00	0.05	0.03	0.10	0.15	0.61	0.53	1.00	1.00
Food Insufficiency (Children)	0.03	0.01	0.13	0.10	0.23	0.19	0.50	0.40	0.84	0.59
Bill Paying Hardship	0.00	0.00	0.56	0.57	0.84	0.90	0.99	0.99	1.00	1.00
Medical Hardship	0.00	0.00	0.26	0.30	0.77	0.73	0.88	0.94	1.00	1.00
Housing Hardship	0.00	0.00	0.14	0.10	0.29	0.22	0.53	0.53	1.00	1.00
Less Than High School	0.09	0.08	0.17	0.14	0.21	0.13	0.40	0.17	0.32	0.14
High School	0.24	0.17	0.34	0.23	0.39	0.24	0.31	0.22	0.11	0.32
Some College	0.34	0.38	0.34	0.49	0.31	0.51	0.24	0.56	0.21	0.50
College	0.33	0.38	0.15	0.14	0.09	0.12	0.06	0.06	0.37	0.05
Male	0.52	0.52	0.50	0.50	0.56	0.54	0.54	0.52	0.63	0.59
Black	0.13	0.12	0.25	0.25	0.23	0.24	0.33	0.31	0.05	0.23
Hispanic	0.13	0.15	0.18	0.20	0.21	0.18	0.25	0.17	0.26	0.09
Single Parent Household	0.24	0.25	0.44	0.47	0.45	0.50	0.65	0.53	0.21	0.45
Previously Retained	0.06	0.07	0.09	0.12	0.10	0.13	0.15	0.18	0.05	0.14
Previously Expelled	0.01	0.00	0.03	0.01	0.05	0.01	0.04	0.01	0.05	0.14
Dislikes School	0.03	0.03	0.05	0.06	0.07	0.05	0.06	0.06	0.00	0.14
Disinterested in School	0.03	0.03	0.06	0.04	0.06	0.05	0.03	0.06	0.05	0.14
Does not Work Hard	0.03	0.02	0.05	0.03	0.05	0.04	0.06	0.02	0.11	0.05
High School Expected	0.30	0.34	0.30	0.34	0.37	0.35	0.32	0.42	0.32	0.32
Some College Expected	0.07	0.04	0.11	0.05	0.09	0.05	0.17	0.02	0.11	0.05
College Expected	0.62	0.62	0.59	0.61	0.53	0.59	0.51	0.56	0.58	0.64
Monthly Household Income	4131	4475	2411	2319	1791	1998	1450	1961	1325	1386
Household Net Worth	97987	143070	30149	40162	42277	31739	23479	27026	8797	10416
N	1985	5355	533	1410	211	659	72	163	19	22

Source: 1996 & 2004 SIPP

numbers of material hardships. Children's prior experience and orientation toward school, however, differ by the incidence and severity of household material hardship, as children in households that experience more hardships are more likely to have previously been retained in grade or expelled, and to dislike, be disinterested and not work hard in school. These characteristics may make children's fulfillment of their parents' expectations more difficult.

Multivariate Analysis

Table 4.3 presents the first set of models predicting in-grade retention for the 1996 and 2004 panels of the SIPP using material hardship and food-support program measures. Model 1 is comparable to the models produced in the second paper of this dissertation, including measures of material hardship, household structure and immigrant headship. Similar to the findings in the second paper, household food insufficiency is predictive of in-grade retention for children in the pooled 1996 and 2004 panel data. As in the prior chapter, household food insufficiency is predictive of children's experience of in-grade retention while the other measures of material hardship are not meaningfully related to retention. An otherwise average child in the sample who lives in a food sufficient household has a 13.6-percent probability of being retained in grade, while a similar child who lives in a food insufficient household has a 17.6-percent probability of retention, the size of this difference is only slightly smaller than that observed in the previous paper, indicating that the household food insufficiency effect is largely 203

Table 4.3. Logit Models Predicting In-Grade Retention using Household Food Insufficiency, Panel Indicator, Panel-Food Insufficiency Interaction, and Food-Targeted Program Participation Measures

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Food Insufficiency (HH)	1.359* (0.203)	1.361* (0.204)	1.768* (0.462)	1.750* (0.459)	1.782* (0.467)	1.776* (0.465)
Bill Paying Hardship	1.108 (0.0906)	1.103 (0.0902)	1.105 (0.0904)	1.080 (0.0901)	1.073 (0.0899)	1.108 (0.0910)
Medical Hardship	0.998 (0.0898)	0.999 (0.0898)	0.995 (0.0895)	1.002 (0.0905)	1.002 (0.0904)	0.996 (0.0897)
Housing Hardship	1.005 (0.134)	1.009 (0.134)	1.003 (0.134)	0.995 (0.133)	0.991 (0.132)	1.005 (0.134)
2004 Panel		1.095 (0.0801)	1.117 (0.0839)	1.104 (0.0832)	1.099 (0.0830)	1.119 (0.0840)
Food*2004 Panel			0.685 (0.212)	0.681 (0.211)	0.676 (0.209)	0.684 (0.212)
Food Stamp Receipt				1.223* (0.113)		
Food Stamp Value					1.003** (0.00103)	
School Lunch Receipt						0.941 (0.0708)
Less than High School	1.072 (0.119)	1.073 (0.119)	1.064 (0.119)	1.030 (0.116)	1.024 (0.116)	1.066 (0.119)
Some College	1.156+ (0.0927)	1.144+ (0.0925)	1.144+ (0.0925)	1.161+ (0.0944)	1.161+ (0.0942)	1.141 (0.0922)
College	0.793* (0.0927)	0.785* (0.0925)	0.783* (0.0925)	0.795* (0.0944)	0.794* (0.0942)	0.778* (0.0922)

	(0.0810)	(0.0807)	(0.0804)	(0.0820)	(0.0818)	(0.0799)
Black	1.524**	1.525**	1.525**	1.489**	1.491**	1.529**
	(0.132)	(0.132)	(0.132)	(0.131)	(0.131)	(0.133)
Hispanic	1.262*	1.253*	1.252*	1.253*	1.255*	1.260*
	(0.120)	(0.119)	(0.119)	(0.120)	(0.120)	(0.120)
Household Income	1.005+	1.005+	1.005+	1.006*	1.006*	1.005+
	(0.00294)	(0.00293)	(0.00293)	(0.00286)	(0.00285)	(0.00294)
Household Net Worth	1.000	1.000	1.000	1.000	1.000	1.000
	(0.000613)	(0.000622)	(0.000624)	(0.000617)	(0.000618)	(0.000629)
Constant	0.226**	0.215**	0.212**	0.213**	0.209**	0.220**
	(0.0504)	(0.0486)	(0.0479)	(0.0481)	(0.0473)	(0.0512)
N	10,429	10,429	10,429	10,429	10,429	10,429

Source: 1996 and 2004 SIPP; Note: data are weighted, standard errors in parenthesis; adjustment variables not appearing here: prior expulsion, prior retention, expected educational attainment, school engagement measures, male, age, metropolitan residence, region, immigrant headship, extended family household, single parent household; **p<0.01, *p<0.05, +p<0.1

Model 2 incorporates an indicator for those children in the sample who are part of the 2004 panel of the SIPP. The association between membership in the 2004 panel and in-grade retention is rather moderate but does indicate a slightly greater likelihood of retention. Notably, other major predictors of in-grade retention change very little between model 1 and model 2, suggesting that the effects of household food insufficiency, household bill paying hardship, other measures of family background and measures of prior school experience are quite stable across panels.

Next, an interaction between 2004 panel membership and household food insufficiency is included in model 3 to more thoroughly assess the difference in the effect of household food insufficiency on the likelihood of in-grade retention across panels. The inclusion of this measure has some notable effects on the estimates relative to model 2. While the interaction term itself is not strongly related to retention, it is negatively associated with in-grade retention and its inclusion increases the effect size of household food insecurity such that an otherwise average child who lives in a food secure household has a 13.5-percent probability of being retained while a similar child in a food insecure household has a 21.6-percent probability of being retained. Additionally, the inclusion of the interaction term slightly increases the strength of the association between the 2004 panel indicator and in-grade retention. Finally, the inclusion of the interaction term has almost no effect on the association of other measures of family background with in-grade retention. Taken together, the first three models indicate that household food insufficiency is very consequential for

children's experiences of in-grade retention across both 1996 and 2004 panels of the SIPP.

Model 4, model 5 and model 6 incorporate additional measures of social programs that target household and child food hardship, the food stamp and school lunch programs to assess the extent to which these programs may moderate the relationship between food hardship and in-grade retention. Model 4 includes an indicator for members of households that participate in the food stamp program. The indicator is strongly associated with in-grade retention, indicating that children in households that receive food stamps are more likely to be retained, an average children who lives in a household that does not receive food stamps has a 13.4-percent probability of being retained, while an otherwise similar child who lives in a household that receives food stamps has a 15.7-percent probability of begin retained. With respect to the question of whether food stamp program participation moderates the relationship between household food insufficiency and retention, the association between household food insufficiency and in-grade retention hardly changes with the addition of the food stamp receipt indicator, suggesting that food stamp receipt has little moderating effect. Notably, the association between household income and in-grade retention becomes stronger with the inclusion of the food stamp receipt indicator, but the size of the effect is does not change meaningfully.

Next, the dollar value of food stamp benefits is substituted for the food stamp receipt indicator to determine whether differences in the value of food stamp benefits may moderate the effect of household food insufficiency differently than as a dichotomous receipt indicator. The estimates in model 5 indicate that the value of

food stamp benefits is strongly related to the likelihood of in-grade retention, as children whose families receive food stamp benefits are more likely to be retained in grade than are children whose families do not. An otherwise average child who lives in a household that does not participate in the food stamp program, the majority of households in the sample, has a 13.4-percent probability of being retained in grade, while a similar child whose household receives the median benefit for households that participate in the food stamp program has a 15.6-percent probability of being retained and a child whose household receives food stamp benefits at the 75th percentile has a 16.5 percent probability of retention. Compared to model 4, the inclusion of the value of food stamp benefits has little effect on the associations between other measures of background and school experience, and in-grade retention. Taken together, the effect of increases in the dollar amount of food stamp benefits and the stability of other measures' associations with retention across dichotomous and value indicators indicate that participation in the food stamp program is consequential for children's experience of in-grade retention, and that children in households that receive greater food support are at greater risk for retention while participation in and the level of support from the food stamp program do not moderate the effect of food insufficiency on the likelihood of retention..

Finally, model 6 incorporates an indicator of children's participation in the school lunch program. In contrast to the models incorporating measures of food stamp program participation, school lunch program participation is not meaningfully related to in-grade retention. This is highlighted by the marked similarity of other covariates'

associations with retention across model 3 and model 6, indicating that school lunch participation offers little additional explanatory power.

I next consider child-specific food insufficiency as a predictor of in-grade retention for children in the 1996 and 2004 panels. Model 1 in Table 4.4 predicts retention for the combined 1996 and 2004 samples using child-specific food insufficiency, bill paying hardship, medical hardship, housing hardship, family background, and prior school experience measures. The model estimates indicate that child-specific food insufficiency is somewhat strongly predictive of in-grade retention across the pooled panel data while other measures of material hardship are not meaningfully related to the likelihood of children's retention. A child who is average for the sample and is not reported to experience food insufficiency has a 13.6-percent probability of being retained, while a similar child who is reported to experience food insufficiency faces a 16.2-percent probability of being retained. This is comparable to the difference in the likelihood of retention across similar children whose parents are college educated versus otherwise comparable children whose parents graduated from high school.

To assess differences in the likelihood of retention across 1996 and 2004 panels of the SIPP, I include an indicator of membership in the 2004 panel in model 2. The panel indicator is positively associated with in-grade retention, but not particularly strongly so. The inclusion of the panel indicator does not have a large effect on the material hardship measures, as the association between child-specific food insufficiency and in-grade retention become slightly larger and more significant, while the association between household bill-paying hardship and retention becomes

Table 4.4. Logit Models Predicting In-Grade Retention using Child-Specific Food Insufficiency, Panel Indicator, Panel-Food Insufficiency Interaction, and Food-Targeted Program Participation Measures

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Food Insufficiency (Kids)	1.230+ (0.146)	1.236+ (0.147)	1.371+ (0.277)	1.366+ (0.275)	1.377+ (0.278)	1.373+ (0.277)
Bill Paying Hardship	1.111 (0.0906)	1.104 (0.0901)	1.106 (0.0903)	1.080 (0.0903)	1.074 (0.0901)	1.109 (0.0910)
Medical Hardship	1.004 (0.0895)	1.004 (0.0896)	1.005 (0.0896)	1.013 (0.0905)	1.014 (0.0905)	1.007 (0.0898)
Housing Hardship	0.999 (0.134)	1.003 (0.134)	0.998 (0.134)	0.990 (0.133)	0.987 (0.133)	1.000 (0.134)
2004 Panel		1.098 (0.0804)	1.113 (0.0851)	1.101 (0.0843)	1.096 (0.0841)	1.115 (0.0851)
Food*2004 Panel			0.857 (0.206)	0.851 (0.205)	0.847 (0.204)	0.859 (0.207)
Food Stamp Receipt				1.226* (0.113)		
Food Stamp Value					1.003** (0.00103)	
School Lunch Receipt						0.942 (0.0709)
Less than High School	1.069 (0.119)	1.069 (0.119)	1.066 (0.119)	1.032 (0.116)	1.027 (0.116)	1.069 (0.119)
Some College	1.159+ (0.0929)	1.148+ (0.0927)	1.147+ (0.0927)	1.164+ (0.0947)	1.163+ (0.0944)	1.143+ (0.0925)
College	0.793* (0.119)	0.785* (0.119)	0.784* (0.119)	0.796* (0.116)	0.795* (0.116)	0.780* (0.119)

	(0.0810)	(0.0806)	(0.0805)	(0.0821)	(0.0819)	(0.0801)
Black	1.516**	1.516**	1.517**	1.482**	1.485**	1.521**
	(0.132)	(0.132)	(0.132)	(0.131)	(0.130)	(0.132)
Hispanic	1.251*	1.241*	1.239*	1.241*	1.242*	1.248*
	(0.119)	(0.118)	(0.119)	(0.119)	(0.119)	(0.120)
Household Income	1.005+	1.005+	1.005+	1.006*	1.006*	1.005+
	(0.00293)	(0.00292)	(0.00292)	(0.00285)	(0.00285)	(0.00293)
Household Net Worth	1.000	1.000	1.000	1.000	1.000	1.000
	(0.000613)	(0.000622)	(0.000623)	(0.000615)	(0.000616)	(0.000628)
Constant	0.225**	0.214**	0.212**	0.213**	0.209**	0.220**
	(0.0502)	(0.0483)	(0.0480)	(0.0482)	(0.0473)	(0.0512)
N	10,429	10,429	10,429	10,429	10,429	10,429

Source: 1996 and 2004 SIPP; Note: data are weighted, standard errors in parenthesis; adjustment variables not appearing here: prior expulsion, prior retention, expected educational attainment, school engagement measures, male, age, metropolitan residence, region, immigrant headship, extended family household, single parent household; **p<0.01, *p<0.05, +p<0.1

slightly smaller and less strong. The association between other measures of family background and school experience, and retention are even less affected with the addition of the panel indicator, suggesting that these influences are quite consistent across panels.

To more comprehensively test the difference in the effect of child-specific food insufficiency across panels, model 3 includes an interaction between child-specific food insufficiency and the 2004 panel indicator. While the interaction term is not meaningfully associated with in-grade retention, the association between child-specific food insufficiency and in-grade retention is more markedly affected with the inclusion of the interaction term, as the size of the association between child-specific food insufficiency and in-grade retention becomes noticeably larger, as was the case with respect to the household food insufficiency effect in Table 4.3 with the inclusion of the interaction term. When the interaction term is included, an otherwise average child who does not experience food insufficiency has a 13.5-percent probability of being retained while a similar child who is reported to experience food insufficiency has a 17.6-percent probability of being retained. The association between the 2004 panel indicator and in-grade retention increases slightly in both size and strength, but to little practical effect. Similarly, the associations between other measures of household background and prior school experience, and retention hardly change with the addition of the interaction term.

Model 4 next incorporates an indicator of household participation in the food stamp program to assess whether food stamp receipt moderates the association between child-specific food insufficiency and in-grade retention. Household receipt of

food stamps is strongly predictive of children's in grade retention. Notably, the size and strength of the association between the food stamp program participation indicator and retention is nearly identical across Table 4.3 and Table 4.4, indicating the independence of the food stamp receipt effect across measures of food hardship. Similarly, as in Table 4.3, the association between household income and retention becomes much stronger with the inclusion of the food stamp participation indicator, likely in part due to the low income required for a household to qualify for the food stamp program. Notably, however, the size of the income effect is minimally affected. Other measures of children's background and prior school experience are fairly stable to the inclusion of the food stamps receipt indicator.

In lieu of the dichotomous indicator of food stamps receipt, model 5 includes a measure of the dollar value of food stamp program assistance a household receives to assess the impact that varying levels of food stamp assistance have on the likelihood of in-grade retention, and the relationship between child-specific food insufficiency and retention. The value of food stamps is strongly predictive of in-grade retention as is food stamp receipt more generally. The inclusion of the value of food stamp benefits has no meaningful effect on the relationship between child-specific food insufficiency and in-grade retention, as was the case with the inclusion of the food stamp program participation indicator. Similarly, the associations between other measures of household background and retention experience little change relative to earlier models, suggesting the independence of food stamp effects on the likelihood of in-grade retention.

Finally, Model 6 includes an indicator of children's participation in the school lunch program to determine the impact of this food hardship focused program has on the likelihood of in-grade retention and on the association between child-specific food insufficiency and retention. In contrast to the two prior models that incorporate food stamp measures, participation in the school lunch program is not strongly related to in-grade retention and has no meaningful effect on other measures' association with in-grade retention when compared to model 3, highlighting the lack of meaningful association between school lunch program participation and children's experiences of retention.

Table 4.5 next incorporates the joint measure of food insufficiency in models predicting in-grade retention. Model 1 predicts in-grade retention using the joint measure of food insufficiency, measures of household bill-paying hardship, medical hardship and housing hardship in addition to measures of children's family and household background, and prior schooling experiences. The associations between individual hardships and in-grade retention are similar to those observed in prior tables. Food hardship, here the joint measure of food insufficiency, is relatively strongly predictive of in-grade retention. An average child who lives in a household that reports no food insufficiency has a 13.6-percent probability of being retained in-grade, while a child who lives in a household that reports either household-level or child-specific food insufficiency, but not both, has a 15.8-percent probability of being retained, and a child who lives in a household that reports both household-level and child-specific food insufficiency has an 18.3-percent probability of being retained. This suggests that more severe food insufficiency, as is assumed to exist in households

Table 4.5. Logit Models Predicting In-Grade Retention using Joint Food Insecurity Measure, Panel Indicator, Panel-Food Insecurity Interaction, and Food-Targeted Program Participation Measures

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Food Insecurity (Joint)	1.197* (0.0970)	1.200* (0.0974)	1.331* (0.180)	1.325* (0.179)	1.337* (0.181)	1.334* (0.181)
Bill Paying Hardship	1.098 (0.0903)	1.092 (0.0899)	1.095 (0.0901)	1.070 (0.0900)	1.063 (0.0898)	1.098 (0.0908)
Medical Hardship	0.992 (0.0891)	0.992 (0.0891)	0.992 (0.0891)	1.000 (0.0900)	1.000 (0.0899)	0.994 (0.0893)
Housing Hardship	0.995 (0.133)	0.998 (0.134)	0.991 (0.133)	0.984 (0.132)	0.980 (0.132)	0.993 (0.133)
2004 Panel		1.099 (0.0804)	1.123 (0.0863)	1.110 (0.0856)	1.106 (0.0854)	1.125 (0.0864)
Food*2004 Panel			0.856 (0.138)	0.852 (0.137)	0.849 (0.137)	0.857 (0.138)
Food Stamp Receipt				1.222* (0.112)		
Food Stamp Value					1.003** (0.00103)	
School Lunch Receipt						0.940 (0.0707)
Less than High School	1.066 (0.118)	1.067 (0.118)	1.060 (0.118)	1.026 (0.116)	1.021 (0.115)	1.062 (0.119)
Some College	1.159+ (0.0929)	1.147+ (0.0927)	1.146+ (0.0927)	1.163+ (0.0946)	1.162+ (0.0944)	1.142+ (0.0924)
College	0.793* (0.0929)	0.786* (0.0927)	0.783* (0.0927)	0.795* (0.0946)	0.794* (0.0944)	0.779* (0.0924)

	(0.0811)	(0.0807)	(0.0805)	(0.0821)	(0.0819)	(0.0800)
Black	1.516**	1.516**	1.518**	1.482**	1.484**	1.521**
	(0.132)	(0.132)	(0.132)	(0.131)	(0.130)	(0.132)
Hispanic	1.253*	1.243*	1.241*	1.243*	1.244*	1.249*
	(0.119)	(0.119)	(0.118)	(0.119)	(0.119)	(0.120)
Household Income	1.005+	1.005+	1.005+	1.006*	1.006*	1.005+
	(0.00293)	(0.00292)	(0.00292)	(0.00285)	(0.00285)	(0.00294)
Household Net Worth	1.000	1.000	1.000	1.000	1.000	1.000
	(0.000613)	(0.000622)	(0.000624)	(0.000616)	(0.000617)	(0.000629)
Constant	0.226**	0.215**	0.211**	0.212**	0.209**	0.220**
	(0.0505)	(0.0486)	(0.0479)	(0.0481)	(0.0473)	(0.0513)
N	10,429	10,429	10,429	10,429	10,429	10,429

Source: 1996 and 2004 SIPP; Note: data are weighted, standard errors in parenthesis; adjustment variables not appearing here: prior expulsion, prior retention, expected educational attainment, school engagement measures, male, age, metropolitan residence, region, immigrant headship, extended family household, single parent household; **p<0.01, *p<0.05, +p<0.1

that report both household-level and child-specific food insufficiency, is more strongly predictive of in-grade retention as expected. Children in well-educated households are less likely to be retained, while children who have previously repeated a grade are more likely to be retained.

Model 2 next includes an indicator of membership in the 2004 panel to assess baseline differences in the likelihood of retention across panels and their effects on other covariates' relationship with retention. While the association is not particularly strong, membership in the 2004 panel is related to a greater likelihood of retention in spite of the greater incidence of retention among the 1996 panel. The association between food insufficiency and in-grade retention is affected very little with the addition of the panel indicator, suggesting that the food insufficiency effect is rather stable across panels. Similarly, household background and prior school experiences are related to in-grade retention in much the same way across models that do and do not include the panel indicator.

To more thoroughly assess the relationship between food insufficiency and in-grade retention across panels, model 3 includes an interaction between the 2004 panel indicator and the joint measure of food insufficiency. The measure itself is not strongly related to retention, but increases the size and strength of the association between the joint measure of food insufficiency and retention, suggesting that the food insufficiency effect is greater than it initially appears. This seems the case as the differences in the likelihood of retention for food insecure children are greater than in models that do not include the interaction term. An otherwise average child who lives in a household that reports no food insufficiency has a 13.4-percent probability of

being retained in-grade, while a child who lives in a household that reports either household-level or child-specific food insufficiency has a 17.1-percent probability of being retained, and a child who lives in a household that reports both household-level and child-specific food insufficiency has a 21.5-percent probability of being retained in-grade. Finally, the associations between children's background and prior school experiences and retention are stable to the inclusion of the interaction term.

Next, models that incorporate measures of food stamp program and school lunch program participation are estimated to determine whether these programs moderate the relationship between food hardship and in-grade retention. Model 4 first incorporates an indicator of households' participation in the food stamp program to assess the general effect of participation on the likelihood of retention and whether this effect moderates the effect of food insufficiency on in-grade retention. Model 4 estimates indicate that children who live in households that receive food stamp program benefits are more likely to be retained in grade than are children whose households do not receive program benefits. An average child in the sample whose household does not participate in the food stamp program has a 13.4-percent probability of being retained, while a similar child whose household participates in the food stamp program has a 15.7-percent probability of being retained. Similar to the previous tables that predict retention using household-level and child-specific food insufficiency, the association between the joint measure of food insufficiency and in-grade retention is very little affected with the inclusion of food stamp program participation, indicating that program participation does not moderate the food insufficiency effect. In spite of the strong relationship between food stamp receipt and

retention, the relationship between children's background and prior school experiences, and retention is very stable across models.

Model 5 next includes the dollar value of the food stamp assistance that households receive rather than the indicator of participation to assess the relationship between the level of assistance received and the likelihood of in-grade retention and its effect on the relationship between food insufficiency and retention. As with food stamp receipt, the value of assistance received is strongly predictive of in-grade retention. An otherwise average child who lives in a household that does not participate in the food stamp program has a 13.4-percent probability of being retained, while a similar child who lives in a household that receives the median level of food stamp benefits has a 15.6-percent probability of being retained, and a child who lives in a household that receives benefits at the 75th percentile for households that participate in the food stamp program has a 16.5-percent probability of being retained. Again, the association between the joint measure of food insufficiency and retention is little affected relative to model 3 with the inclusion of the value of food stamps assistance received. As observed in model 4, the inclusion of the value of food stamps received does not consequentially affect the relationship between children's background and prior school experience, and their likelihood of in-grade retention.

Finally, model 6 includes an indicator of children's participation in the school lunch program to determine how the likelihood of retention, and the relationship between food insufficiency and in-grade retention is affected by participation the school lunch program. The indicator of participation in the school lunch program is not meaningfully related to children's experience of in-grade retention. Moreover, the

inclusion of the measure has little effect on other covariates in the model as other measures' association with retention is comparable across model 3 and model 6.

Table 4.6 presents models predicting in-grade retention in the pooled data using the final measure of food hardship. Model 1 first predicts retention using the measure of food hardship, household bill-paying hardship, medical hardship and housing hardship in addition to measures of children's background and prior school experience. In contrast to model 1 in the previous tables, food hardship is only somewhat weakly related to in-grade retention while household bill-paying hardship is associated with retention in a manner similar to the previous tables. As in previous tables, children from well-educated households are much less likely to be retained, and children who have previously repeated a grade are more likely to be retained.

Model 2 incorporates an indicator of membership in the 2004 panel to determine relative differences in the likelihood of in-grade retention across the two panels. The panel indicator is positively, but not particularly strongly, related to in-grade retention, suggesting that members of the 2004 panel, net of other measures, are slightly more likely to be retained than are members of the 1996 panel. The associations between hardship measures and retention are largely unchanged with the addition of the panel indicator, as are measures of children's background and prior school experience, indicating that these relationships do not differ greatly across panels.

The food hardship measure is interacted with the 2004 panel indicator so as to better assess the differences in the relationship between food hardship and in-grade retention across the 1996 and 2004 panels. Model 3 includes this interaction term in

Table 4.6. Logit Models Predicting In-Grade Retention using Joint Food Hardship Measure, Panel Indicator, Panel-Food Insufficiency Interaction, and Food-Targeted Program Participation Measures

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Food Hardship	1.062 (0.0541)	1.064 (0.0542)	1.178* (0.0963)	1.169* (0.0956)	1.178* (0.0964)	1.181* (0.0964)
Bill Paying Hardship	1.102 (0.0931)	1.096 (0.0926)	1.102 (0.0931)	1.082 (0.0930)	1.073 (0.0928)	1.105 (0.0936)
Medical Hardship	1.000 (0.0902)	1.000 (0.0902)	1.000 (0.0902)	1.010 (0.0913)	1.010 (0.0912)	1.001 (0.0903)
Housing Hardship	1.002 (0.135)	1.005 (0.135)	0.996 (0.135)	0.990 (0.134)	0.986 (0.133)	0.997 (0.135)
2004 Panel		1.097 (0.0803)	1.163+ (0.0963)	1.151+ (0.0955)	1.148+ (0.0952)	1.166+ (0.0964)
Food*2004 Panel			0.861 (0.0806)	0.857 (0.0806)	0.854* (0.0802)	0.861 (0.0806)
Food Stamp Receipt				1.223* (0.113)		
Food Stamp Value					1.003** (0.00103)	
School Lunch Receipt						0.940 (0.0707)
Less than High School	1.070 (0.119)	1.071 (0.119)	1.059 (0.118)	1.026 (0.116)	1.021 (0.115)	1.062 (0.118)
Some College	1.158+ (0.0929)	1.146+ (0.0927)	1.146+ (0.0927)	1.163+ (0.0945)	1.162+ (0.0943)	1.143+ (0.0924)
College	0.795* (0.0929)	0.787* (0.0927)	0.784* (0.0927)	0.796* (0.0945)	0.795* (0.0943)	0.780* (0.0924)

	(0.0813)	(0.0809)	(0.0807)	(0.0822)	(0.0821)	(0.0802)
Black	1.518**	1.518**	1.521**	1.487**	1.488**	1.524**
	(0.132)	(0.132)	(0.132)	(0.131)	(0.131)	(0.133)
Hispanic	1.256*	1.247*	1.243*	1.246*	1.246*	1.252*
	(0.119)	(0.119)	(0.118)	(0.119)	(0.119)	(0.119)
Household Income	1.005+	1.005+	1.005+	1.006*	1.006*	1.005+
	(0.00292)	(0.00292)	(0.00292)	(0.00285)	(0.00284)	(0.00293)
Household Net Worth	1.000	1.000	1.000	1.000	1.000	1.000
	(0.000611)	(0.000620)	(0.000624)	(0.000617)	(0.000618)	(0.000629)
Constant	0.224**	0.213**	0.203**	0.204**	0.200**	0.211**
	(0.0500)	(0.0481)	(0.0464)	(0.0466)	(0.0457)	(0.0495)
N	10,429	10,429	10,429	10,429	10,429	10,429

Source: 1996 and 2004 SIPP; Note: data are weighted, standard errors in parenthesis; adjustment variables not appearing here: prior expulsion, prior retention, expected educational attainment, school engagement measures, male, age, metropolitan residence, region, immigrant headship, extended family household, single parent household; **p<0.01, *P<0.05, +p<0.1

addition to the panel indicator. With the inclusion of the interaction term, the association between food hardship and in-grade retention becomes much stronger, and the association between the panel indicator and retention becomes somewhat stronger as well. Children who live in households that are otherwise average but report different severities of food hardship face different likelihoods of retention. A child in an average household that reports no food hardship has a 13.6-percent probability of being retained in-grade, while a child who lives in a household that reports the least severe food hardship has a 14.3-percent probability of being retained, a child who lives in a household that reports the next most severe food hardship has a 15-percent probability of being retained, and a child who lives in a household that reports the most severe food hardship has a 15.8-percent probability of being retained.

An indicator of household participation in the food stamp program is next included in model 4 to assess the relationship between food hardship targeted programs and in-grade retention, and to assess whether food stamp program participation moderates the association between food hardship and retention. The strong association between food stamp receipt and retention indicates that children who live in households that participate in the food stamp program are more likely to be retained than children in households that do not. An otherwise average child whose household does not participate in the food stamp program has a 13.4-percent probability of being retained in grade, while a similar child whose household does participate in the food stamp program has a 15.7-percent probability of being retained. While the food hardship effect is rather minimally affected by the inclusion of the food stamp receipt indicator, the association between household bill-paying hardship

and retention becomes much weaker, suggesting that households that have difficulty meeting necessary expenses also face circumstances that make their uptake of and eligibility for more likely. Coefficients for other measures of children's background and prior school experience are little affected with the inclusion of the food stamp receipt indicator.

Model 5 next includes a measure of the value of food stamps received by households instead of the dichotomous indicator of food stamps receipt to examine how differences in the value of food stamps received by households affect children's likelihood of retention and the relationship between food hardship and in-grade retention. Like the indicator of food stamp receipt, the value of food stamps received by households is strongly related to children's experience of in-grade retention. An average child whose family does not participate in the food stamp program has a 13.4-percent probability of being retained, while similar children whose households receive benefits at the median and 75th percentile for households that participate in the food stamp program respectively have 15.6- and 16.5-percent probability of being retained. The 2004 panel indicator remains moderately predictive of retention, while the panel-food hardship interaction term remains moderately negatively associated with in-grade retention, indicating that food hardship is more determinative of retention in the 1996 panel.

Finally, children's participation in the school lunch program is included in model 6 to assess the relationship between the receipt of school lunch and in-grade retention, and how it affects the food hardship effect on the likelihood of retention. As in previous tables, participation in the school lunch program is not meaningfully

related to children's experience of in-grade retention and other covariates' relationship to retention closely approximate those observed in model 3, indicating that participation in the school lunch program has little impact on children's likelihood of being retained, and no consequential moderating effect on the relationship between food hardship and in-grade retention.

Welfare Program Effects

I next consider the question of how differences in state rules governing social program following from PRWORA affect children's likelihood of in-grade retention, and the relationships between food hardship and retention observed in the previous tables. The analyses incorporate the three state-level policy measures of generosity of state benefits, time limits on the receipt of benefits and limits on the assets that households may hold while maintaining eligibility for TANF benefits. The models incorporate the dollar amount of households' food stamp benefits following the previous analysis as this measure better captures variation among the subset of households that participate in the food stamp program.

To examine the impact of differences in state welfare policy, Table 4.7 presents logit models predicting in-grade retention using household food insufficiency, in addition to other measures of children's background and prior school experience. Model 1 is comparable to model 5 in Table 4.3, predicting retention using the value of food stamps received by the household in addition to measures of material hardship, family background and prior school experience. The model estimates mirror those in Table 4.4, household food insufficiency is a relatively strong predictor of in-grade

Table 4.7. Logit Models Predicting In-Grade Retention using Household Food Insufficiency and State-Level Policy Measures

	Model 1	Model 2	Model 3	Model 4	Model 5
Maximum Benefit		0.999** (7.19e-05)			0.999** (7.19e-05)
Time Limit (Months)			1.007 (0.00526)		1.004 (0.00533)
Asset Limit				1.000 (0.00138)	1.000 (0.00141)
Food Insufficiency (HH)	1.782* (0.467)	1.784* (0.466)	1.781* (0.466)	1.782* (0.466)	1.781* (0.466)
Bill Paying Hardship	1.073 (0.0899)	1.071 (0.0899)	1.071 (0.0901)	1.072 (0.0902)	1.070 (0.0899)
Medical Hardship	1.002 (0.0904)	1.001 (0.0905)	1.005 (0.0909)	1.005 (0.0909)	1.002 (0.0906)
Housing Hardship	0.991 (0.132)	1.008 (0.135)	0.994 (0.133)	0.995 (0.133)	1.007 (0.135)
2004 Panel	1.099 (0.0830)	1.095 (0.0829)	1.099 (0.0832)	1.099 (0.0832)	1.095 (0.0829)
Food*2004 Panel	0.676 (0.209)	0.672 (0.208)	0.678 (0.210)	0.679 (0.210)	0.672 (0.208)
Food Stamp Value	1.003* (0.00103)	1.003** (0.00103)	1.003* (0.00103)	1.003** (0.00103)	1.003** (0.00103)
Less than High School	1.024 (0.116)	1.028 (0.116)	1.023 (0.116)	1.025 (0.116)	1.026 (0.116)
Some College	1.161+ (0.0942)	1.157+ (0.0945)	1.159+ (0.0945)	1.161+ (0.0947)	1.157+ (0.0945)

College	0.794*	0.789*	0.789*	0.789*	0.789*
	(0.0818)	(0.0817)	(0.0818)	(0.0818)	(0.0818)
Household Income	1.006*	1.006*	1.006+	1.006*	1.006+
	(0.00285)	(0.00288)	(0.00291)	(0.00290)	(0.00290)
Household Net Worth	1.000	1.000	1.000	1.000	1.000
	(0.000618)	(0.000623)	(0.000628)	(0.000628)	(0.000623)
Constant	0.209**	0.235**	0.138**	0.210**	0.181**
	(0.0473)	(0.0541)	(0.0533)	(0.0476)	(0.0710)
N	10,429	10,263	10,263	10,263	10,263

Source: 1996 and 2004 SIPP; Note: data are weighted, standard errors in parenthesis; adjustment variables not appearing here: prior expulsion, prior retention, expected educational attainment, school engagement measures, male, age, metropolitan residence, region, immigrant headship, extended family household, single parent household; **p<0.01, *P<0.05, +p<0.1

retention while other measures of material hardship are weakly or not meaningfully related to retention, children living in better educated households are less likely to be retained, and children who have previously repeated a grade are much more likely to be retained again.

Turning to the question of how differences in welfare policy affects the experience of retention, model 2 includes the state-level measure of the maximum level of benefits available to a family of three to capture the impact of states' relative generosity. States' generosity is strongly negatively related to children's experience of in-grade retention, suggesting that states that have more generous welfare policies may also provide more support, educational and otherwise, to students and families that affects children's likelihood of retention. An otherwise average child who lives in a state with the median level of TANF benefits has a probability of retention is 14-percent, while a similar child who lives in a state with the most generous benefits has a 12.1-percent probability of retention. A similar absolute difference in the likelihood of retention is observed between comparable children who have high school- and college-educated parents. The association between household food insufficiency and retention is little affected with the inclusion of the maximum welfare benefit level, indicating that differences in the generosity of state benefits does not affect the relationship between food insufficiency and retention. The association between other measures of children's background and their experience of retention does not change with the addition of state benefits to the model.

I next consider variation in the time limits that states place on individuals' receipt of TANF benefits, incorporating the number of months that an individual can

receive benefits under state law into model 3. State time limits are not strongly related to children's experience of in-grade retention, contrary to expectations. Notably, the associations between other covariates and retention and in-grade retention are not affected with the inclusion of TANF time limits, reinforcing its marginal effect.

Model 4 next includes the maximum value of assets that a family of three can hold while maintaining eligibility for TANF benefits to assess how more prescriptive state rules affect retention, and the relationship between food insufficiency and retention. Again, the relationship between household food insufficiency and in-grade retention is stable to the addition of the asset limit measure, as are the associations of other measures of children's background with retention, reflecting the lack of a meaningful association between state asset limits and children's experience of retention.

Finally, I include all three policy measures in model 5 to assess their joint effect on the likelihood of in-grade retention, and on the relationship between household food insufficiency and retention. The associations between policy measures and retention are very similar across models that include the policy measures individually and their joint inclusion on model 5. This suggests that different policy dynamics are captured by the maximum benefit and time limit measures. Material hardship measures, and children's other background and prior school experience measures differ little across models that include no policy measures, individual policy

measures and all three policy measures, indicating that policy changes exert their own influence rather than being mediated by household characteristics.¹⁰

I next consider the how state-level variation in welfare policy rules affects the relationship between child-specific food insufficiency and in-grade retention across the 1996 and 2004 panels of the SIPP. Table 4.8 presents models predicting retention that include child-specific food insufficiency, other measures of material hardship, family background and prior schooling experience, and state-level welfare policy measures. Model 1 is analogous to model 5 in Table 4.4, predicting in-grade retention using the full set of material hardship measures in addition to family background, prior school experience, the 2004 panel indicator and panel-food insufficiency interaction term. Child-specific food insufficiency is predictive of in-grade retention, as is children's experience of prior retention, while better educated households are negatively associated with retention.

To begin examining the impact of variation in welfare policy across states on the likelihood of in-grade retention, and the association between child-specific food insufficiency and retention, model 2 incorporates the maximum level of TANF benefits that a family of three can receive under state law. Model 2 indicates that children in states with more generous TANF benefit policies are less likely to be retained in grade but the generosity of state TANF benefits does not affect the relationship between food insufficiency and in-grade retention. As in the previous table, a child who is otherwise average and lives in a state with median-level TANF

¹⁰ In models not presented here policy measures are interacted with the 2004 panel indicator and the interaction terms are included to assess whether differences in the associations between policy measures, and retention and other covariates exist across panels. These models do not yield findings that differ from the models presented here, indicating that no such differences exist.

Table 4.8. Logit Models Predicting In-Grade Retention using Child-Specific Food Insufficiency and State-Level Policy Measures

	Model 1	Model 2	Model 3	Model 4	Model 5
Maximum Benefit		0.999** (7.18e-05)			0.999** (7.18e-05)
Time Limit (Months)			1.007 (0.00525)		1.004 (0.00533)
Asset Limit				1.000 (0.00139)	1.000 (0.00141)
Food Insufficiency (Children)	1.377+ (0.278)	1.386+ (0.278)	1.376 (0.278)	1.379+ (0.278)	1.383+ (0.278)
Bill Paying Hardship	1.074 (0.0901)	1.072 (0.0902)	1.072 (0.0903)	1.073 (0.0904)	1.072 (0.0902)
Medical Hardship	1.014 (0.0905)	1.013 (0.0906)	1.017 (0.0910)	1.017 (0.0910)	1.014 (0.0908)
Housing Hardship	0.987 (0.133)	1.004 (0.135)	0.990 (0.133)	0.991 (0.133)	1.002 (0.135)
2004 Panel	1.096 (0.0841)	1.093 (0.0842)	1.096 (0.0844)	1.096 (0.0844)	1.093 (0.0841)
Food*2004 Panel	0.847 (0.204)	0.834 (0.200)	0.845 (0.203)	0.846 (0.203)	0.834 (0.201)
Food Stamp Value	1.003** (0.00103)	1.003** (0.00103)	1.003** (0.00103)	1.003** (0.00103)	1.003** (0.00103)
Less than High School	1.027 (0.116)	1.031 (0.116)	1.026 (0.116)	1.028 (0.116)	1.029 (0.116)
Some College	1.163+ (0.0944)	1.160+ (0.0947)	1.161+ (0.0947)	1.163+ (0.0950)	1.160+ (0.0948)

College	0.795*	0.790*	0.790*	0.790*	0.790*
	(0.0819)	(0.0818)	(0.0820)	(0.0819)	(0.0819)
Household Income	1.006*	1.006*	1.006*	1.006*	1.006*
	(0.00285)	(0.00288)	(0.00291)	(0.00289)	(0.00289)
Household Net Worth	1.000	1.000	1.000	1.000	1.000
	(0.000616)	(0.000621)	(0.000626)	(0.000627)	(0.000621)
Constant	0.209**	0.235**	0.139**	0.210**	0.183**
	(0.0473)	(0.0541)	(0.0535)	(0.0477)	(0.0714)
N	10,429	10,263	10,263	10,263	10,263

Source: 1996 and 2004 SIPP; Note: data are weighted, standard errors in parenthesis; adjustment variables not appearing here: prior expulsion, prior retention, expected educational attainment, school engagement measures, male, age, metropolitan residence, region, immigrant headship, extended family household, single parent household; **p<0.01, *P<0.05, +p<0.1

benefits has a 14-percent probability of being retained, while a similar child living in a state with the most generous benefits has a 12.1-percent probability of being retained. Notably, the size of this effect does not change from the household-level food insufficiency model to the child-specific food insufficiency model. Additionally, other measures of children's backgrounds are similarly associated with retention across model 1 and model 2, offering additional evidence that policy effects are not mediated by household and family characteristics.

The next policy measure that I consider is the number of months for which individuals may receive TANF benefits under state rules, which is included in model 4. As in the previous table, state time limits are not meaningfully related to children's experience of retention when considered alongside child-specific food insufficiency. Notably, the relationship between child-specific food hardship and other covariates, and in-grade retention changes little with the inclusion of lifetime time limits relative to the model excluding policy measures.

I finally consider the impact of the strictness of states' asset limits by including a measure of the maximum value of assets that a family of three is permitted to hold while maintaining their eligibility for TANF benefits in model 3. Unlike states' maximum benefit level, asset limits are not meaningfully related to children's experience of in-grade retention. Reflecting the lack of meaningful association, the relationship between other covariates and retention is comparable across model 1 and model 3.

Finally, model 5 includes all three policy measures to assess their joint effect on retention, and on the relationship between child-specific food insufficiency and

retention. The associations between policy measures and in-grade retention are very similar to those observed in models that include the policy measures individually, suggesting the independence of policy effects. Additionally, there is very minimal change in the association between other measures of children's background, including child-specific food insufficiency, and experiences of retention, indicating that state welfare policy does not affect the likelihood of retention through its impact on family and household circumstances.

Table 4.9 presents logit models predicting in-grade retention using the joint food insufficiency measure developed in the second chapter of this dissertation in addition to other material hardship measures and state welfare policy measures. Model 1 is analogous to model 5 in Table 4.5, showing that children in more food insecure households are at greater risk of being retained in grade, as are children in households that receive more food stamp assistance and children who have previously repeated a grade. Children who live in better-educated households are less likely to be retained. This model serves a reference point for the subsequent models that include policy measures.

The first policy measure that I include, in model 2, is the maximum value of TANF benefits that a family of three people can receive under state rules and is included to assess the impact of states' relative difference in generosity on the likelihood of retention, and on the relationship between food insufficiency and retention. As expected, children who live in states that have more generous benefits are less likely to be retained than are children who live in less generous states. Again the effect associated with the generosity of state TANF benefits mirror those observed

Table 4.9. Logit Models Predicting In-Grade Retention using Joint Food Insufficiency and State-Level Policy Measures

	Model 1	Model 2	Model 3	Model 4	Model 5
Maximum Benefit		0.999** (7.19e-05)			0.999** (7.19e-05)
Time Limit (Months)			1.007 (0.00526)		1.004 (0.00533)
Asset Limit				1.000 (0.00138)	1.000 (0.00141)
Food Insufficiency (Joint)	1.337* (0.181)	1.341* (0.181)	1.337* (0.181)	1.338* (0.181)	1.340* (0.181)
Bill Paying Hardship	1.063 (0.0898)	1.061 (0.0899)	1.061 (0.0900)	1.062 (0.0901)	1.061 (0.0899)
Medical Hardship	1.000 (0.0899)	0.999 (0.0900)	1.004 (0.0904)	1.003 (0.0904)	1.001 (0.0902)
Housing Hardship	0.980 (0.132)	0.996 (0.134)	0.982 (0.132)	0.984 (0.132)	0.995 (0.134)
2004 Panel	1.106 (0.0854)	1.103 (0.0854)	1.105 (0.0856)	1.106 (0.0857)	1.102 (0.0854)
Food*2004 Panel	0.849 (0.137)	0.841 (0.135)	0.848 (0.136)	0.849 (0.136)	0.841 (0.135)
Food Stamp Value	1.003** (0.00103)	1.003** (0.00103)	1.003** (0.00103)	1.003** (0.00103)	1.003** (0.00103)
Less than High School	1.021 (0.115)	1.024 (0.116)	1.020 (0.116)	1.022 (0.116)	1.022 (0.116)
Some College	1.162+ (0.0944)	1.159+ (0.0947)	1.160+ (0.0947)	1.163+ (0.0950)	1.159+ (0.0947)

College	0.794*	0.789*	0.790*	0.790*	0.790*
	(0.0819)	(0.0818)	(0.0820)	(0.0819)	(0.0819)
Household Income	1.006*	1.006*	1.006*	1.006*	1.006*
	(0.00285)	(0.00288)	(0.00291)	(0.00289)	(0.00289)
Household Net Worth	1.000	1.000	1.000	1.000	1.000
	(0.000617)	(0.000622)	(0.000628)	(0.000628)	(0.000622)
Constant	0.209**	0.234**	0.139**	0.209**	0.182**
	(0.0473)	(0.0541)	(0.0535)	(0.0476)	(0.0714)
N	10,429	10,263	10,263	10,263	10,263

Source: 1996 and 2004 SIPP; Note: data are weighted, standard errors in parenthesis; adjustment variables not appearing here: prior expulsion, prior retention, expected educational attainment, school engagement measures, male, age, metropolitan residence, region, immigrant headship, extended family household, single parent household; **p<0.01, *P<0.05, +p<0.1

in previous models as a child who is average on all other measures has the same advantage in the most generous state relative to a similar child in the least generous state as they would having college educated parents compared to a similar child with high school educated parents. With respect to the effect of state welfare generosity on the association between food insufficiency and in-grade retention, little change in the relationship is observed between model 1 and model 2 with the addition of the maximum benefit measure, indicating that state benefit generosity does not affect the likelihood of retention through food insufficiency. Further to this point, other covariates change very little with the inclusion of states' maximum benefit level.

To further assess policy impacts, I next consider the number of months to which states limit individuals' lifetime receipt of TANF benefits in model 3. Contrary to expectations, children who live in states that allow individuals to receive benefits for greater period of time do not meaningfully differ in their experiences of retention from peer who live in states with shorter time limits. As in previous models incorporating other measures of state policy, the inclusion of state time limits has very minimal effect on the associations among other covariates and retention.

Model 4 next considers the impact of the strictness of state rules as they concern the value of assets that a family of three may hold while maintaining eligibility for TANF benefits. State asset limits are not meaningfully related to the likelihood of retention, contrary to expectation. The non-effect of state asset limits is further reflected in the close correspondence between covariates' association with retention across model 1 and model 3.

I finally assess the joint effect of all state policy measures in model 5. The associations between maximum benefit level and retention, and between state time limits and retention are quite similar in model 5 to those estimated in model 2 and model 4, suggesting that the generosity of state benefits and the generosity of state time limits affect retention likelihoods independently of one another.

Finally, Table 4.10 considers the broadest measure of household food hardship as it is impacted by variation in state welfare policy. Model 1 reproduces model 5 in Table 4.6 including material hardship measures, and measures of family background and children's previous school experience in addition to the 2004 panel indicator, food hardship-panel interaction term, and the value of food stamps received by the households. Children in households that report greater food hardship are more likely to be retained in grade, as are children who have previously repeated a grade and children who live in households that receive greater food stamp aid. Children who live in better-educated households are less likely to be retained than peers who live in less well educated households.

To assess the impact of variation in state welfare rules, I first include the value of the maximum TANF benefit available to a family of three under state rules in model 2. As expected, the more generous state TANF benefits are negatively related to in-grade retention. Similar to that seen in the previous tables, the difference in the likelihood of retention for an otherwise average child living in the most generous or least generous state is comparable to the difference for a similarly average child, holding state benefit generosity constant, with college- and high school-educated parents. The association between food hardship and in-grade retention, and between

Table 4.10. Logit Models Predicting In-Grade Retention using Food Hardship and State-Level Policy Measures

	Model 1	Model 2	Model 3	Model 4	Model 5
Maximum Benefit		0.999** (7.18e-05)			0.999* (7.19e-05)
Time Limit (Months)			1.007 (0.00527)		1.004 (0.00535)
Asset Limit				1.000 (0.00138)	1.000 (0.00141)
Food Hardship	1.178* (0.0964)	1.176* (0.0961)	1.175* (0.0963)	1.178* (0.0962)	1.174* (0.0961)
Bill Paying Hardship	1.073 (0.0928)	1.074 (0.0930)	1.074 (0.0932)	1.074 (0.0932)	1.074 (0.0931)
Medical Hardship	1.010 (0.0912)	1.011 (0.0914)	1.016 (0.0919)	1.014 (0.0917)	1.013 (0.0916)
Housing Hardship	0.986 (0.133)	1.003 (0.136)	0.989 (0.134)	0.990 (0.134)	1.002 (0.136)
2004 Panel	1.148+ (0.0952)	1.146+ (0.0954)	1.149+ (0.0957)	1.149+ (0.0957)	1.145+ (0.0954)
Food*2004 Panel	0.854+ (0.0802)	0.849+ (0.0798)	0.849+ (0.0800)	0.851+ (0.0800)	0.848+ (0.0799)
Food Stamp Value	1.003** (0.00103)	1.003** (0.00103)	1.003** (0.00103)	1.003** (0.00103)	1.003** (0.00103)
Less than High School	1.021 (0.115)	1.024 (0.116)	1.020 (0.115)	1.021 (0.116)	1.023 (0.116)
Some College	1.162+ (0.0943)	1.160+ (0.0946)	1.161+ (0.0946)	1.163+ (0.0949)	1.159+ (0.0946)

College	0.795*	0.789*	0.790*	0.790*	0.790*
	(0.0821)	(0.0819)	(0.0820)	(0.0820)	(0.0820)
Household Income	1.006*	1.006*	1.006*	1.006*	1.006*
	(0.00284)	(0.00287)	(0.00290)	(0.00289)	(0.00289)
Household Net Worth	1.000	1.000	1.000	1.000	1.000
	(0.000618)	(0.000624)	(0.000629)	(0.000629)	(0.000624)
Constant	0.200**	0.224**	0.132**	0.200**	0.174**
	(0.0457)	(0.0522)	(0.0512)	(0.0460)	(0.0683)
N	10,429	10,263	10,263	10,263	10,263

Source: 1996 and 2004 SIPP; Note: data are weighted, standard errors in parenthesis; adjustment variables not appearing here: prior expulsion, prior retention, expected educational attainment, school engagement measures, male, age, metropolitan residence, region, immigrant headship, extended family household, single parent household; **p<0.01, *P<0.05, +p<0.1

the value of food stamps received and retention are little affected with the inclusion of state welfare generosity, indicating that the policy effect is largely independent of these effects. Other covariates' associations with retention are similarly unchanged.

I next consider the number of months to which states limit individuals' lifetime eligibility for TANF benefits, including the measure in model 3. State time limits are related to in-grade retention, however, the association is positive contrary to expectations. As with the inclusion of other measures of state welfare policy, the inclusion of time limits does not meaningfully affect the associations between other measures and children's experience of retention.

The last policy measure that I consider is the strictness of states' limits on the value of assets that a household of three can hold while maintaining eligibility for aid in model 4. Contrary to expectations, and unlike the generosity of state benefits, state asset limits are not meaningfully related to children's experience of in-grade retention. Similarly, other covariates' associations with retention are unaffected with the addition of asset limits.

Finally, model 5 incorporates all three state policy measures to assess their joint impact on the likelihood of in-grade retention, and on the relationship between food hardship and retention. Notably, the associations between policy measures and retention are very similar in model 5 to those estimates generated by models that incorporate the measures individually, indicating the independence of state benefit generosity and time limit effects. This is reinforced by the minimal impact that the inclusion of policy measures has on other covariates' relationship to in-grade retention relative to model 1.

DISCUSSION

In this study I extend the measure of family background beyond commonly employed measures of socioeconomic status – income and education – to include the additional and consequential dimension of material hardship, a dimension with substantial variation and one that is not captured by commonly utilized measures of background. In assessing hardship’ effects on grade retention among elementary students I consider a process that has substantial implications for students’ long-term outcomes through immediate, persisting and cumulative processes, and thereby an avenue through which cumulative disadvantage can be affected. I extend the previous paper’s finding that food insufficiency is predictive of in-grade retention by considering the effects of food-hardship-focused policy interventions and variation in state level rules governing social policy across the 1996 and 2004 panels of the SIPP.

The data analyzed bookend a period during which substantial change occurred in social and educational policy, and provide some insight into the effects wrought by these changes. Social policy was altered with the passage and implementation of the Personal Responsibility and Work Opportunity Act, and educational policy with the implementation of the No Child Left Behind Act. While temporally proximate to the 1996 panel, welfare reform likely has limited effect in the data as statutory limits on benefit receipt were unlikely to have reached their full effect by the end of the period of observation and, despite some states having changed their TANF policy prior to the period of observation, almost all states’ policies became more punitive and less generous between the 1996 and 2004 panels of the SIPP. The impacts of education

reform, while implemented between the two panels, cannot be assessed for lack of measures in the data with which possible impacts might be assessed with more precision.

The main finding of interest following the theoretical motivation for the analyses – exploring the effects of material hardship as an oft-ignored component of family background and its implication for in-grade retention – is that food hardship has a sizeable and persistent effect on the likelihood of retention across panels. Analyses considering other measures of food hardship – food insufficiency specific to children in the household, a food insufficiency measure composed of household-level and child-specific food insufficiency, and a more general food hardship measure – find similarly consequential effect on children’s likelihood of in-grade retention. The difference in the likelihood of retention across otherwise average children who live in households that have no food hardship and those who live in households with the most severe food hardship is similar across measures, offering further support for a general food hardship effect.

Analyses that introduce measures of food hardship targeted governmental program interventions find that participation in the food stamp program and the amount of food stamp support received are strongly predictive of in-grade retention, but that these association do not moderate the association between food hardship and retention or that between other covariates and retention. Similarly, analyses incorporating social program measures do not find social program participation to affect the relationship between food hardship and retention, while the analyses find that more generous state TANF benefits are strongly associated with lower likelihood

of in-grade retention for children. The independence of food stamp and state TANF generosity effects from food hardship and other background effects supports the role of material hardship generally, and food hardship specifically as an important component of background a determinant of life outcomes.

In these analyses, food hardship measures are some of the strongest predictors of retention. To provide context for these effects using another example of children's background, the difference in the likelihood of retention across otherwise comparable children who live in households that report no food hardship and those that report the most severe food hardship approaches parity with the difference in the likelihood of retention across otherwise comparable black and white children when food hardship is assessed using the measure of child-specific food insufficiency, and greatly surpasses the black-white difference when food hardship is assessed using any of the three other measures. While the strength of the association between food hardship and other outcomes may not be as strong as it is in relationship to in-grade retention, the comparability of the food hardship effects explored here and the effects of minority status indicate that material hardship, and food hardship specifically is an important and consequential component of individuals' background, the implications of which should be considered more broadly and in the context of other disadvantages that may be inherent to individuals' backgrounds.

With many states having reduced the level of benefits available to TANF recipients under state rules, shortened or tightened lifetime limits on the receipt of benefits, and sharply cut or eliminated support for low-income working families in the years following the 2008 recession, it is all the more important to continue to consider

the relationship between hardship and lifecourse trajectories, and how policy affects lifecourse trajectories through both its impacts on individuals' and households' experiences of hardship and its direct effects on lifecourse trajectories and transitions.

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