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Early Childhood Economic Disadvantage and the Health of Hispanic Children

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Kammi K. Schmeer[1]

Abstract

This study uses data from the Fragile Families and Child Wellbeing Study to provide a longitudinal view of economic deprivation during early childhood and the associations with health at age 5 in a sample of children born to Hispanic mothers. In this sample of urban and disadvantaged Hispanic families, the findings suggest that the total waves in poverty, total waves without health insurance, and ever receiving free food are associated with worse health at age 5. These effects are additive, indicating that multiple types of economic deprivation may contribute to the low health status of young Hispanic children. Further, interaction effects indicate important differences in the poverty effects by maternal nativity. Contrary to what literature on the foreign-born health advantage would predict, early childhood poverty has a relatively large negative association with age 5 health status for children with foreign-born and Mexican-origin mothers, but has no significant impact among Hispanic children with U.S.-born or non-Mexican mothers.

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Introduction

Hispanics currently number over 45 million (15% of the population) and account for more than half of the U.S. population growth since 2000. Our largest ethnic minority group is also one of the most disadvantaged: Hispanics (along with African Americans) are more likely to live at less than 50% of the poverty line than other racial groups (Woolf, Johnson, & Geiger, 2006) and almost a quarter of Hispanics have less than a 9th grade education compared with 6% in the rest of the U.S. population (U.S. Census Bureau, 2006). Further, historic evidence suggests that Hispanics are more prone to job loss during economic recessions than non-Hispanics and that Hispanics fall behind non-Hispanic groups across multiple indicators of economic status (Krueger & Orszag, 2002). Of particular concern is the lack of assets, savings, and social safety net (e.g., government benefits, insurance, etc.) among Hispanics, which makes them more vulnerable during times of temporary income loss (Krueger & Orszag, 2002). Foreign-born Hispanics are often worse off economically than their U.S.-born counterparts due to lower education levels, higher fertility rates, poor English language skills, and disadvantaged citizenship status compared with native-born Hispanics (Pew Hispanic Center, 2010).

This research suggests that Hispanic families are likely to face economic constraints that may have serious consequences for their children's health and well-being. Not surprisingly, Hispanic children are more likely than White or African American children to have lower physical and oral health status and have higher risks of obesity and asthma (U.S. Department of Health and Human Services, 2009). The childhood health disadvantage of Hispanics emerges despite their apparent health advantage during infancy, when Hispanic infants have lower mortality (Hummer, Powers, Pullum, Gossman, & Frisbie, 2007), higher birth weight, and are more likely to be breastfed than infants in other racial/ethnic groups (U.S. Department of Health and Human Services, 2009). The largest challenges to ensuring healthy development among Hispanic children may occur during early childhood, when children are no longer

protected by breastfeeding, are more mobile and susceptible to household risks, and require more economic resources (for food, clothing, medicine, and other health inputs) for care. Early childhood is also a critical developmental period when poor health may have a lasting impact on later health and socioeconomic status (Anne Case, Fertig, & Paxson, 2005; Palloni, 2006).

As a first step in understanding the apparent health disadvantage of Hispanic children, this study assesses the impact of longitudinal measures of household economic deprivation on the health of young Hispanic children. The specific research questions posed in this study include:

(1) Are poverty, material hardship, and the lack of health insurance between birth and age 5 associated with worse health at age 5 for children born to Hispanic mothers?

(2) Do material hardships and access to health insurance mediate the effects of poverty on child health?

(3) Do maternal place of birth or union status moderate the associations between household economic deprivation and child health?

Longitudinal data from the Fragile Families Study are utilized to answer these questions, allowing for multi-year assessments of early childhood economic deprivation. Further, data on mothers' place of birth (i.e., nativity) and union status at birth permit an assessment of differences in the associations for key sub-groups of Hispanic children. This research is an important first step in understanding links between disadvantaged household conditions and health for a large and highly vulnerable group in the U.S.: young Hispanic children.

Background

Economic deprivation may be linked with child health for a number of reasons. First, children need adequate nutrition (sufficient quantity and quality of food) to maintain their health status. The lack of consistent nutrition may have serious consequences for the health and development of young children in particular (Ashiabi & O'Neal, 2008; Cook & Frank, 2008). Second, if resources needed for preventing and treating illnesses are scarce, illnesses may last longer or become more severe with long term consequences for children's healthy development (A. Case & Paxson, 2006). Economically disadvantaged households are also likely to have more household and neighborhood-level hazards that can result in higher rates and multiple episodes of injuries (Crandall, Sridharan, & Schermer, 2010; Khambalia et al., 2006) and toxic exposures (Leventhal & Newman, 2010) among poor children. Finally, more general qualities of increased stress levels (among parents and the children themselves), worse parental health, lower quality parenting, and less parental supervision in economically deprived households can have deleterious consequences for children's health (Barnett, 2008; Brooks-Gunn & Duncan, 1997; Heflin & Iceland, 2009; Wadsworth, Raviv, Reinhard, Wolff, Santiago, & Einhorn, 2008).

A review of the large body of literature on economic resources and child well-being through the 1990s finds that multiple year poverty, extreme poverty, and early childhood poverty may have serious consequences for child well-being (Brooks-Gunn & Duncan, 1997). More recently, research using national data showed that poverty correlated with illness (Victorino & Gauthier, 2009), global health status, activity limitation, and oral health status among 0-17 year olds (Larson & Halfon, 2010). In addition to household income, various indicators of material hardship may be related to child health (especially among young children), including: overall hardship level (Frank et al., 2010), food insecurity (Casey et al., 2005; Cook et al., 2006; Dubois, Farmer, Girard, & Porcherie, 2006; Jyoti, Frongillo, &

Jones, 2005; Metallinos-Katsaras, Sherry, & Kallio, 2009; Yoo, Slack, & Holl, 2009), poor housing conditions (Leventhal & Newman, 2010), and utilities insecurity (Cook et al., 2008). One study found that both poverty and material hardship measures had independent effects on child health (Ashiabi & O'Neal, 2008).

These studies indicate the potential importance of economic resources for child health, but tell us little about how Hispanic children's health is impacted by economic deprivation. To date, research on Hispanic child health has focused on mainly assessing racial/ethnic differences in health controlling for socioeconomic status (Brotanek, Gosz, Weitzman, & Flores, 2007; Brown & Longoria, 2010; Padilla, Hamilton, & Hummer, 2009). One recent study is an exception, finding that Hispanic children were more susceptible to the health effects due to the stress of economic deprivation than were African American children (Wadsworth et al., 2008). Given that Hispanic children are highly vulnerable to multiple types of economic deprivation, including poverty, material hardship, and the lack of health insurance (Hamilton, Hummer, You, & Padilla, 2006; Kaiser et al., 2002; Kersey, Geppert, & Cutts, 2007; Padilla, Radey, Hummer, & Kim, 2006; Van Wie, Ziegenfuss, Blewett, & Davern, 2008; Woolf et al., 2006), estimating the health effects of these different types of deprivation among young Hispanic children is a needed area of research addressed in this study.

Hispanics are an important group to understand, not only due to their vulnerability and large size, but also due to their within group heterogeneity. One key difference is nativity status. Hispanic children with foreign-born parents are least likely to have health insurance (Hamilton et al., 2006), at more risk for hunger (Kersey et al., 2007), more likely to live in poverty, and least likely to have social support compared with their U.S. born counterparts (Hummer & Hamilton, 2010; Padilla et al., 2006). However, it is not clear whether these economic disadvantages necessarily translate into worse child health among Hispanic children with foreign-born parents. Research suggests that foreign-born Hispanic mothers may

ensure better health for their children at the same socio-economic level as native born Hispanic mothers due to healthier infancies (less prenatal smoking, higher birth weight, longer breastfeeding, more immunizations) and better childhood diets (Flores & Brotanek, 2005; Lora, Giraud, Davy, & Driskell, 2006; Mazur, Marquis, & Jensen, 2003), as well as stronger marital unions and other family support (Hummer & Hamilton, 2010).

Supporting evidence for this foreign-born health advantage among Hispanic children, however, is limited. One study found that less acculturated Hispanic mothers in Los Angeles were more likely to be current on children's immunizations than more acculturated mothers (Anderson, Wood, & Sherbourne, 1997). Another study using Fragile Families data found that children with U.S.-born Mexican-American mothers had more chronic conditions at age 5 than White children, but those with foreign-born Mexican mothers did not have significantly worse health than White children at this age (Padilla et al., 2009). There is some evidence to suggest that this foreign-born health advantage may be applicable only to Mexicans (Jerant, Arellanes, & Franks, 2008). Another study finds evidence to the contrary, that children with foreign-born mothers had worse heath status than those with U.S. born mothers (Chilton et al., 2009). Thus, it may be that by early childhood any infant health advantages experienced by Hispanic children (or subgroups) are lost as children get older. Further, none of these studies directly test whether economic conditions affect Hispanic children equally across subgroups.

Directly testing whether economic deprivation matters for child health differently by maternal nativity or union status at birth is of particular interest in this study. Despite some suggestive evidence to the contrary, there are a number of reasons to hypothesize a stronger negative effect of economic deprivation on child health among children with foreign-born compared with U.S.-born Hispanic mothers. First, research shows that immigrant mothers are less likely to use center-based care for their children (Brandon, 2004). This may result in household environments having stronger effects on

children with immigrant parents due to their increased exposure to the household and ability to obtain fewer resources (like food) from outside care. Supporting this idea, research has found that Hispanics toddlers are less likely to be in daycare than White or Black children, and that non-day care toddlers have higher risks of iron deficiency (Brotanek et al., 2007). There is also evidence that Hispanic children are more likely to have elevated blood lead levels than other populations (Brown & Longoria, 2010), which may signal another risk to Hispanic children's health if they spend more time in a poor home environment. Second, lower levels of social support and higher isolation of foreign-born compared with U.S.-born mothers (Hummer & Hamilton, 2010) may indicate they are less able to buffer their children from the direct health impacts of poor economic conditions.

The moderating role of maternal union status at birth is also assessed in this paper. Births to unmarried Hispanic mothers are a growing concern (Manlove, Ryan, Wildsmith, & Franzetta, 2010). Research shows that these mothers may be particularly lacking in social and other supports needed to buffer their children from the health effects of economic deprivation (Hummer & Hamilton, 2010; Padilla et al., 2006).

In sum, the aim of this study is to build on existing social and health inequalities' research by assessing the impact of economic deprivation on the health of young Hispanic children. This study characterizes Hispanic children's economic disadvantage using longitudinal measures of household poverty, material hardships, and the lack of health insurance during the first 5 years of life and assesses the health consequences at age 5. The study focuses on a Hispanic sample, and direct testing of sub-group differences, to increase our understanding health inequalities within this heterogeneous and highly vulnerable group.

Data & Sample

The data used are from the Fragile Families and Child Wellbeing Study, a longitudinal study of almost 5,000 children born in large U.S. cities between 1998 and 2000. Maternal, paternal, child, and household data were collected at the focal child's birth and again at ages 1, 3, and 5. The data are representative of births in large U.S. cities and include a large portion of non-martial births and non-White births (see Reichman, Teitler, Garfinkel, & McLanahan, 2001 for a detailed discussion). The substantial number of births to Hispanic mothers included in the survey (n=1333 at baseline) is the base sample used in this study.

These data are particularly well suited for considering the research questions for several reasons. First, they focus on the period of early childhood, an important stage of physical and cognitive development when policy efforts to reduce social disparities may have long-term effects. Second, the longitudinal data include several economic deprivation measures across multiple years between birth and age 5 (at birth and ages 1, 3, and 5 for poverty status and at ages 1, 3, and 5 for material hardship and health insurance measures) and child health status at age 5. Third, the data include information about the mother's place of birth, allowing for an assessment of differences by mothers' nativity (U.S. vs. foreign-born and Mexican vs. non-Mexican Hispanic mothers). Finally, unique to the Fragile Families design that oversampled unmarried parents, the data provide an adequate sample of both married and unmarried Hispanic mothers to assess whether children born to Hispanic single mothers may suffer particular health risks from economic deprivation.

The analytic study sample consists of all children born to Hispanic mothers who were in all waves (to be able to assess total poverty and hardship across early childhood) and who lived with their mother all or some of the time through age 5 (this is necessary because the economic deprivation measures are assessed for the maternal household). Of the 1333 children born to Hispanic mothers, 234

were missing the dependent variable due to attrition by the age 5 wave. Keeping only children living mainly with their mothers deleted an additional 216, which included those missing age 1 or 3 data on economic deprivation. Another 49 were missing data on the mother's country of birth, and 29 were missing other control variables. This results in an analytical sample of 814 children born to Hispanic mothers. The main concern in dropping these cases is any bias that may be created by selection on the dependent variable. However, tests show that neither age 1 nor age 3 child health status differs significantly between cases dropped and those in the final sample.

The unweighted descriptive statistics of the sample are presented in Table 1.[1] This is a sample of 50% male and female children with relatively young mothers at birth (average 24.5 years). Of the sample mothers, 40% are foreign born, and almost 60% are of Mexican heritage (with a similar percentage Mexican in both foreign and U.S. born mothers). The non-Mexican mothers include those from Puerto Rico, Cuba, elsewhere in the Caribbean and Latin America, and an undefined "other Hispanic." This sample composition is similar to national level statistics where 40% of Hispanics are foreign-born and 65% are of Mexican origin (Pew Hispanic Center, 2010). Additionally, most sample fathers (84%) were Hispanic, and 60% were U.S. born[2]. As suggested in previous research, maternal education is low (almost 50% of Hispanic mothers have less than a high school degree), but almost half of the mothers were working when the child was one year old (most likely in low-paying jobs). The sample children were born into households with, on average, more than one child already in the household. In addition, over a quarter of the sample had a grandparent in the household at birth. A relatively large portion of the sample children (31%) were born to single Hispanic mothers, which

[1] Survey weights are not used in descriptive statistics or regression analyses because over 200 of the final sample cases are missing weights. Further, it is not clear which weights to use since the data combine information across survey waves (the weights are defined for each survey wave). As a result, the descriptive statistics are not necessarily representative of Hispanic children in urban areas.

[2] Father's nativity is not included in the analysis due to 120 sample cases missing on this variable. Sensitivity analysis indicated that father's nativity status was correlated with child health status, but its inclusion did not change the results.

allows for assessing the moderating role of maternal union status at birth in addition to maternal nativity. Approximately 6% of the children were born low birth weight, which is similar to the Hispanic national average of just over 6% in 1998-2000 (the years when these children were born) (U.S. Department of Health and Human Services, 2009). The mothers' health status did not fare well; only 25% had mothers who reported being in excellent health at the time of the birth and by one year after the birth, and 13% of these Hispanic mothers reported feeling depressed.

<Table 1 here>

Measures

Dependent variable

The dependent variable in this study is overall health status of the child as reported by the mother when the child was approximately age 5. Possible categories include excellent, very good, good, fair, or poor. This measure is comparable to the self-rated health measure asked of adults, which has been used across multiple social and health surveys as a reliable measure of overall health linked with mortality and multiple diseases (DeSalvo KB, 2006; Idler & Benyamini, 1997; Idler & Kasl, 1995). There have been several recent studies of this measure for children, which show that that other indicators of child health (prior diagnosis of health conditions, chronic health problems, low birth weight, and child injuries) are associated with this parent-reported measure (Crandall et al., 2010; Sparks, 2009; Stein, Siegel, & Bauman, 2010).

Due to relatively few cases being reported as fair or poor, the final child health variable was collapsed into three categories (1=excellent, 2=very good, and 3=good/fair/poor). The mean value of this three category variable in the full sample is 1.6 (see Table 1). Table 2 shows the distribution of the sample across the three categories and further disaggregates the measure by mother's nativity and union status at birth. In the full sample, 57% of children were reported to be in excellent health, 27% in very

good health, and 15% in good, fair, or poor health at age 5. A recent study of a national sample of children aged 0-17 from the National Health Interview Survey reported the distribution of Hispanic child health (averaged from 1997 to 2006) to be: 44% excellent, 30% very good, and 26% good/fair/poor or unknown (Leigh & Wheatley, 2009). The worse child health distribution in this national sample compared to the Fragile Families sample may be due to the inclusion of children of older ages (when more health problems may be apparent), those in rural areas, and include the missing data ("unknown") in the lowest health category. It may also be due to sample differences in the nativity or immigrant status of the Hispanic mothers.

As Table 2 illustrates, in the Fragile Families sample, child health status differs by maternal nativity (foreign versus U.S.-born), with children from U.S.-born mothers having a significantly higher mean for excellent status and a significantly lower mean for good/fair/poor health. The large portion of children with foreign-born mothers in the worst health category suggests that by age 5 any health advantage these children may have had at birth (via lower birth rates, higher maternal marriage rates, and better maternal health behaviors) is lost (according to this measure) by age 5. Children whose mothers were of Mexican origin, however, did not differ in health status (except for very good health) from those whose mothers were non-Mexican Hispanics. Child health status does not differ significantly by Hispanic mothers' union status at birth (in union vs. single), suggesting that single Hispanic mothers may be able to buffer their children from harsh economic conditions, while foreign-born Hispanic mothers face the largest challenges to protecting their young children's health.

<Table 2 here>

Economic Deprivation Variables

The first measure of economic deprivation considered here is total times the child's household income was below the poverty line during early childhood (out of a possible four times assessed: at

birth, and ages 1, 3, and 5). Differentiating those in severe poverty (50% or below the income/poverty ratio) from less severe poverty (51-100% of the income/poverty ratio) showed these categories to be very similar in their effects. Thus, *total waves in poverty* was the preferred measure. On average, the sample children lived in poverty 1.9 times out of 4.0. Children born to foreign-born, Mexican-origin, and single mothers experienced significantly more total waves of poverty (over 2) in early childhood than those with U.S.-born, non-Mexican, or married/cohabiting mothers (see Table 2).

Material hardship was assessed at average ages 1, 3, 5, and referred to whether the household had experienced various indicators of insecurity related to food, housing, and utilities due to the lack of money during the 12 months prior to the survey.[3] A composite measure of whether the household experienced any of the various hardships in a given wave was summed to produce a measure of the number of times a child's household had experienced any food, housing, or utilities hardship across the three waves.[4] The average number of waves a child's household experienced a hardship was 1.3, although the mean differed significantly across sub-groups. Unlike poverty, children with U.S.-born Hispanic mothers had a higher mean number of waves experiencing at least one material hardship than those with foreign-born mothers. Not surprisingly, children experienced significantly more hardship when born to a single mother than a mother in union with the father at birth. The means for total material hardship did not differ significantly between children with Mexican and non-Mexican origin mothers (see Table 2).

[3] A question about whether in the past 12 months someone in the household had needed to see a doctor but could not do so due to the lack of money was excluded from this study because it is likely endogenous with child health (i.e., those with sicker children will experience this more).

[4] Sensitivity analysis showed that a measure summing the total number of hardships (rather than any hardship) for each wave was insignificant in the models. Total number of waves when any hardship was experienced was preferred for its significant association with child health and its comparability to the cumulative poverty measure.

Because recent research suggests various aspects of hardship fit better as distinct components rather than an overall measure of hardship (Heflin, Sandberg, & Rafail, 2009), separate measures of food, housing, and utilities hardship were also created. Two questions were asked in the survey to assess household food insecurity: 1) whether the household had received free food because there was no money for food, and 2) whether an adult or child had gone hungry in the past 12 months. The hunger question was asked at ages 1 and 5 only and very rarely occurred. Given the potential reporting bias (how individuals define hunger has been questioned in recent food insecurity literature) and lack of positive responses to this question, it was dropped from the final analysis. Once summed across waves, the measure of total waves having received free food was collapsed into a dummy variable due to 95% of the sample households being distributed between 0 and 1 time. Thus, the free food measure is a dichotomous indicator of whether the child's household had ever received free food during early childhood. This occurred in 21% of the full sample, with significant mean differences by maternal union status at birth but not maternal nativity (see Table 2).

Housing hardship was assessed by summing the number of waves a child's household had experienced at least one of four indicators: moving in with others, being evicted, living in a shelter, and not paying the full mortgage/rent in the past 12 months. A similar measure was developed for the utilities hardship, indicating number of waves a child's household: had not paid a bill, borrowed money from a friend to pay a bill, had the telephone shut off, or had the gas/electric shut off in the past 12 months. As reflected in the total hardship measure, children born to U.S.-born mothers had a higher average number of waves of housing and utility hardships during early childhood compared with those who had foreign-born Hispanic mothers. This is somewhat surprising given the expectation that first-generation Hispanic immigrant mothers have higher poverty rates and less social support than native Hispanic mothers (Hummer & Hamilton, 2010). It may be that these mothers are able to ensure housing

and utilities security because of their higher rates of being in marital unions (even if poor). Children born to single Hispanic mothers had significantly higher average total housing and utility hardships during this time compared with those born to mothers in union with the birth father (see Table 2).

A final economic deprivation measure is whether the mother or her children had no health insurance at each wave (ages 1, 3, 5). This is not included in the global measure of material hardship because it was not asked in the same way as the food, housing, and utilities questions (as experienced in the past 12 months), but rather is a measure of current access by the mother and/or her children to health insurance. Further, health insurance is a distinct form of deprivation since it relates directly to families' ability to access medical care. This measure was summed across waves, and similar to the other measures, indicates the number of waves in which a child experienced this household-level deprivation. Although utilizing longitudinal data allows for defining a child's cumulative access to health insurance at multiple time points, short periods of being insured or uninsured between waves are not captured in this measure.

The average waves the sample children were uninsured was 1.2; however, this measure differed significantly by maternal nativity: children with foreign-born mothers lacked health insurance coverage for, on average, 1.5 of the three waves, while those with U.S.-born mothers averaged less than one wave without health insurance. Children with mothers of Mexican origin also had higher average total waves lacking health insurance than those with non-Mexican mothers. This measure did not differ by union status, indicating a similar lack of access to health insurance (more than 1 wave uninsured, on average) among children born to Hispanic single mothers and those in a union (see Table 2).

Nativity & Union Status Variables

Three independent variables are defined as potential moderators of the effects of economic deprivation on child health: mother U.S. versus foreign-born, mother of Mexican versus other Hispanic

heritage, and mother single vs. in union with father at birth. Mother's place of birth was used to define both nativity variables, and her status with the child's biological father at the time of the birth was characterized as either single (no father living in the household) or in union (cohabiting with or married to the bio father). These variables are important control variables in the models described below and are interacted with each of the economic deprivation variables described above to test for differences across these key groups within the Hispanic sample.

Statistical Methods

The associations between household economic deprivation and children's health status are estimated using multivariate, multinomial logistic regression models. The results are presented as relative risk ratios (exponentiated coefficients), which represent the increase in the probability of being in a given child health category (very good or good/fair/poor) over the probability of being in excellent health for each unit increase in the deprivation measure of interest. Ratios greater than one indicate a positive association, while ratios below one indicate a negative association. Statistical significance is assessed at $p<.05$.

One concern in estimating these associations is the ability to estimate the direct effects of the various types of deprivation, which requires controlling for the other measures. Total poverty, total hardships, and total health insurance are all correlated at less than $r=0.4$ and can be included in the same model. The food, housing, and utilities material hardship measures are each entered into the models separately (with poverty and health insurance) due to their higher correlations with each other. One question posed is whether these various hardship measures mediate the impact of poverty on child health. This is evaluated by assessing how the size and significance of the coefficient on poverty changes with inclusion of the other economic deprivation measures in the model.

Also of interest is whether the patterns found are different depending on the mother's nativity or union status at birth. This is assessed by including the interaction terms created by multiplying U.S. born, Mexican-origin, and single at birth with each of the economic measures. Because of the diversity within this Hispanic sample, U.S.-born and Mexican-origin variables (and their interaction terms) are not too highly correlated, thus are entered in the model together to distinguish foreign-born from Mexican-ethnicity effects. Interaction effects that are significant at $p<.05$ are considered significant moderating effects.

Another methodological challenge is reducing biases due to unobserved differences among these children and their families that may lead to erroneous conclusions about the associations between economic deprivation and child health. The multinomial logistic regression models that control for household, child, and parent characteristics have the potential to confound the economic deprivation associations and are observed in the data (see Table 1 for control variables included in all analyses). Unobserved differences are not controlled in these models. Although individual-level change (i.e., fixed effects) models are ideal in reducing unobserved biases, the categorical dependent variable does not easily allow such estimation. The use of change models would also preclude the use of cumulative measures of economic deprivation, which is recognized as a more complete measure of deprivation with important consequences for child well-being (Brooks-Gunn & Duncan, 1997; Guo, 1998).

Results

The findings for the full sample are presented in Table 3 below, which shows the relative risk ratios (RRR) of children being reported as being in very good (= 2) and good/fair/poor health (= 3) compared with excellent health. Model 1, Table 3 shows the negative impact of cumulative poverty on Hispanic child health at age 5: each wave a sample child lived below the poverty line between birth and age 5, increases the risk, on average, of being in very good health by 26% and good/fair/poor health by 51% compared with the chance of being in excellent health. However, Model 2 shows that the number of waves a child's household experienced material hardship (food, housing, or utilities) between ages 1 and 5 is not associated with child health status (this variable was insignificant in models without poverty, not shown here). Model 2 also indicates a very slight attenuation of the poverty effect when material hardship is included in the model. Thus, there is little evidence that poverty affects child health through material hardship in this sample.

<Table 3 here>

Model 3 adds another key measure of economic deprivation experienced by many Hispanic children: the lack of health insurance. Each wave that the mother or her children lacked health insurance increases the risk of being in the worst compared with best health category at age 5 by 30%. Model 3 shows that the lack of health insurance mediates some of the poverty effect on child health, but both remain significant and substantial in their associations with child health at age 5.

Models 4 through 6 further differentiate the material hardship components and show that only food hardship (ever having received free food) between ages 1 and 5 is associated with child health status. This experience doubles the risk of a child being in good/fair/poor compared with excellent health at age 5.

The above models were also estimated with interaction effects to test for differences in the effects of the economic deprivation variables by mother's nativity and union status at birth. None of the material hardship variables or total lack of health insurance differed by maternal characteristics (models not shown here). This indicates that the significant effects found in Table 3 for food insecurity and the lack of health insurance hold across Hispanic children in this sample regardless of their mothers' place of birth or union status.

Total waves in poverty did differ significantly by maternal nativity. Table 4 shows the Relative Risk Ratios (RRRs) comparing good/fair/poor health with excellent health status from the interacted models (controls included but not reported for brevity)[5]. These results suggest that poverty has a stronger association with child health for children with foreign-born and Mexican-origin mothers (see interaction effects in Models 1 and 2). Further, when entered together, both interactions remain significant, indicating that both are independent moderators of total waves in poverty. With both interactions included in Model 3, the RRR for total poverty indicates that for the reference group (children with mothers who are foreign-born, non-Mexican Hispanics), each wave living in poverty increases the risk of being in the worst compared with best health category by almost 50%. Children with Mexican, foreign-born mothers have the highest risk of being in this worse health category, an RRR of 2.19. The associations of total poverty with child health among those whose mothers are native born are not statistically different from zero for either Mexican (RRR=1.27) or non-Mexican (RRR=0.87) mothers. These results suggest that, in this sample of Hispanic fragile families, foreign-born Mexican mothers face the largest challenges to protecting their children's health from the hazards of early childhood poverty.

<Table 4 here>

[5] There were no significant interaction effects for differentiating between very good and excellent health status by maternal nativity, results not shown.

Models 4-6 in Table 4 illustrate whether the other significant economic deprivation measures (free food and total lack of health insurance) from Table 3 mediate the poverty interaction effects. When each is entered separately, there is some mediation, especially for the Mexican-origin interaction term when controlling for lack of access to health insurance (Model 5). When both free food and lack of health insurance are included (Model 6), the Mexican-origin interaction term drops in size and becomes insignificant. This suggests that the difference in the effect of total poverty on child health between Hispanic children with Mexican and non-Mexican mothers may work, in part, through the health detriments of food and health care for children with Mexican mothers.

Somewhat surprisingly, union status at birth did not moderate the effects of poverty or any other economic deprivation measures on child health (results not shown here). It seems, therefore, that poverty is similar in its associations with health for Hispanic children born to single mothers and those with their fathers living in the household (married or cohabiting) at birth.

Discussion

Hispanic children represent one of the fastest growing, most economically-vulnerable populations in the U.S.; however, we know little about how economic deprivation may impact the health of these children, or whether there are similar effects across key subgroups within the Hispanic population. This study utilized longitudinal measures of poverty, material hardship and access to health insurance to assess how economic deprivation in the first 5 years of life may affect Hispanic children's health status by age 5.

The findings from this sample of children born to Hispanic mothers in relatively disadvantaged, urban households (i.e., fragile families), supported the existing research that economic hardship is important for child health. Consistent with prior research, total waves of poverty had a strong negative association with health status at age 5 (Brooks-Gunn & Duncan, 1997), and total waves lacking health

insurance was an important predictor of child health even with total poverty in the model. Unlike some other research on all U.S. children (Frank et al., 2010), in this sample of Hispanic children, there was little evidence that a summary measures of material hardship mattered for health status (it had no direct effect and did not mediate the poverty effect). Receiving free food at some point during early childhood was the only material hardship measure associated with child health. This is not surprising, given other research that suggests the detriments of food insecurity for child health even when controlling for maternal health (Yoo et al., 2009). There was little evidence of mediation of the poverty effect by the food insecurity or the lack of health insurance measures, indicating that each wave a household was in poverty, lacked health insurance, or ever received free food had distinct, additive health disadvantages in this Hispanic sample.

When sub-group differences were considered, the associations of total poverty with child health differed substantially by whether the child's mother was foreign- vs. U.S.-born and Mexican-origin vs. non-Mexican. The health disadvantages with increasing waves of poverty were found only for child with foreign-born and Mexican-origin Hispanic mothers, with the strongest effects of poverty on the health of children with foreign-born Mexican mothers. Having received free food and total waves of health insurance explained some of the moderating effect of ethnicity, but the moderating effect of foreign-born status was not mediated by these other measures. These results suggest, contrary to what the literature on the foreign-born health advantage would predict, children with foreign-born and Mexican-origin mothers may have an increased risk of health problems with time spent living in poverty. Children with U.S.-born and non-Mexican mothers suffered no statistically significant health consequences of living in poverty. Surprisingly, union status of the mothers did not play a large role in explaining health disparities among these Hispanic children nor in moderating the effects of economic deprivation on their health status.

Several limitations to this research should be noted. First, the findings rely on a sample of urban and relatively disadvantaged births, thus should not be generalized to the larger population of Hispanic children. Second, the measure of child health utilized here is reported by the mother. Although this measure has been substantiated in the literature as a reliable indicator of global health status, there may be systematic and unobserved biases in mothers' reporting that have not been accounted for here. This is one reason why this study does not compare Hispanics to other racial groups. However, it is still possible that some of the differences in child health status within the Hispanic sample are due to foreign-born mothers' distinct reporting patterns (there was no difference in the distribution of child health status by Mexican-origin or union status). The interaction effects, though, indicate that within the foreign-born sample, poverty plays a key role in differentiating those reported as good/fair/poor and those reported as in excellent health. Further, this measure does have the advantage of picking up health problems that may not be diagnosed, which means it may be a better measure of health status among groups like Hispanics who have very limited access to health care. Third, other unobserved biases may also be at work, thus the findings of this study should be considered associations rather than causal.

Notwithstanding these limitations, important conclusions can be drawn from this study. First, during early childhood, household economic deprivation is associated with worse Hispanic child health. Policy makers should be concerned about this population, since Hispanics experience some of the lowest socio-economic conditions of all racial/ethnic groups in the U.S., and early childhood is a critical period when resulting health disadvantages may set children on trajectories of reduced physical and cognitive growth. Second, the independent effects of the lack of income, food, and health insurance suggest that these are distinct disadvantages impacting Hispanic children. Improving Hispanic child health is likely to require multiple policies that address each of these factors. Further, the associations for *total poverty* and *total lack of health insurance* indicate that each time a child lacks access to sufficient income or

health insurance may have an important effect on their health, and experiencing multiple years of these disadvantages may be particularly detrimental. Thus, efforts should be made to improve consistent access to income, health insurance, and food in Hispanic households with young children. Finally, the finding that Hispanic children with foreign-born mothers may be at particular high health risks from the lack of household income is troubling, since children with foreign-born parents are more likely to experience long-term and more severe poverty than others groups. Subsequent research should build on these findings to further assess how household resources may affect Hispanic child health at different ages and for other measures of health status.

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Table 1: Sample Descriptives of Children Born to Hispanic Mothers. Fragile Families Data. N=814.

Variable[1]	Mean	Std. Dev.	Min	Max
Child's health status (age 5)	1.57	0.74	1	3
Child male	0.51	0.50	0	1
Child low birth weight	0.06	0.23	0	1
Mother's age	24.57	5.70	15	43
Mother U.S. born	0.59	0.49	0	1
Mother Mexican-origin	0.60	0.49	0	1
Father Hispanic	0.84	0.36	0	1
Father Black	0.08	0.28	0	1
Father White	0.06	0.24	0	1
Father other race	0.02	0.14	0	1
Mother less than high school degree	0.48	0.50	0	1
Mother high school degree	0.27	0.44	0	1
Mother some college	0.21	0.41	0	1
Mother college graduate	0.04	0.19	0	1
Mother working (at child age 1)	0.46	0.50	0	1
Mother religious	0.41	0.49	0	1
No. children in household	1.18	1.23	0	6
Grandparent in household	0.27	0.45	0	1
Mother married to bio dad	0.23	0.42	0	1
Mother cohabiting with bio dad	0.46	0.50	0	1
Mother single	0.31	0.46	0	1
Mother in excellent health	0.25	0.43	0	1
Mother depressed (at child age 1)	0.13	0.33	0	1

[1]Variables assessed at birth unless otherwise noted.

Table 2: Key Variable Means for Children Born to Hispanic Mothers by Subgroup. Fragile Families Data. N=814.

		Mother's Nativity			Mother's Union Status at Birth	
	All Hispanic (N=814)	Foreign born (N=355)	U.S. born (N=459)	Mex origin (N=494)	Non-Mex (N=320)	In Union (N=560)	Single (N=254)
Health status distribution (Age 5)[1]							
Excellent	0.57	0.48	0.64	0.59	0.54	0.59	0.54
Very good	0.27	0.24	0.29	0.24	0.31	0.24	0.33
Good/fair/poor	0.16	0.27	0.07	0.16	0.15	0.17	0.13
Early childhood economic deprivation[2]							
General economic deprivation:							
# waves living below poverty line (0-4)	1.91	2.14	1.73	2.04	1.73	1.75	2.27
# waves food, housing or utility hardship (0-3)	1.27	1.05	1.44	1.28	1.28	1.22	1.39
Specific hardships:							
Ever received free food (0,1)	0.21	0.19	0.22	0.21	0.21	0.19	0.25
# waves housing insecure (0-3)	0.53	0.42	0.61	0.52	0.55	0.50	0.61
# waves utilities insecure (0-3)	1.07	0.84	1.24	1.08	1.07	1.03	1.15
Total waves uninsured (0-3)	1.15	1.46	0.92	1.30	0.90	1.17	1.12

[1]Significantly different means ($p<.01$) by nativity but not Mexican origin or union status of the mother.

[2]All means statistically different ($p<.05$) between foreign and U.S.-born Hispanic mothers (except free food), and between "in union" and single Hispanic mothers (except no health insurance). The means that statistically differed between Mexican and non-Mexican origin mothers were total waves uninsured and total waves in poverty.

Table 3: Relative Risk Ratios from Multinomial Regression of Child Health Status on Household Economic Deprivation. Fragile Families Data. N= 814.

	2=Very good health status; 3=Good/fair/poor health status; Reference group=Excellent health status											
	(1)		(2)		(3)		(4)		(5)		(6)	
	2	3	2	3	2	3	2	3	2	3	2	3
Economic Deprivation												
Total poverty	1.26**	1.51**	1.24**	1.48**	1.24**	1.37**	1.24**	1.37**	1.27**	1.38**	1.25**	1.40**
	(0.096)	(0.15)	(0.097)	(0.15)	(0.099)	(0.14)	(0.098)	(0.14)	(0.10)	(0.14)	(0.099)	(0.15)
Total any hardship			1.08	1.13	1.08	1.15						
			(0.090)	(0.13)	(0.090)	(0.13)						
Total uninsured					1.00	1.30*	1.01	1.33**	1.00	1.31**	1.00	1.29*
					(0.085)	(0.14)	(0.086)	(0.14)	(0.085)	(0.14)	(0.084)	(0.14)
Ever free food							1.45	2.01*				
							(0.30)	(0.55)				
Total housing hardship									0.96	1.23		
									(0.10)	(0.18)		
Total utilities hardship											1.07	1.04
											(0.092)	(0.12)
Controls												
Child male	1.04	1.47	1.03	1.47	1.03	1.49	1.03	1.49	1.03	1.51	1.03	1.49
	(0.18)	(0.33)	(0.18)	(0.33)	(0.18)	(0.33)	(0.18)	(0.33)	(0.18)	(0.34)	(0.18)	(0.33)
Child low birth weight	1.99	2.93*	2.01	2.96*	2.01	2.93*	2.02	2.97*	1.98	2.95*	2.00	2.92*
	(0.73)	(1.53)	(0.74)	(1.55)	(0.74)	(1.52)	(0.74)	(1.57)	(0.73)	(1.53)	(0.73)	(1.50)
Mother's age at birth	0.99	1.04	1.00	1.04*	1.00	1.05*	1.00	1.05*	0.99	1.05*	1.00	1.04*
	(0.018)	(0.021)	(0.018)	(0.021)	(0.018)	(0.021)	(0.018)	(0.021)	(0.018)	(0.021)	(0.018)	(0.021)
Mother U.S. born	0.94	0.26**	0.91	0.25**	0.91	0.27**	0.92	0.27**	0.95	0.27**	0.92	0.28**
	(0.19)	(0.068)	(0.18)	(0.067)	(0.18)	(0.073)	(0.18)	(0.073)	(0.19)	(0.073)	(0.18)	(0.076)
Mother Mexican-origin	0.66*	0.73	0.66*	0.73	0.66*	0.67	0.66*	0.65	0.67*	0.68	0.66*	0.68
	(0.12)	(0.17)	(0.12)	(0.17)	(0.12)	(0.16)	(0.12)	(0.16)	(0.12)	(0.17)	(0.12)	(0.16)
Father Black[1]	1.11	0.76	1.09	0.73	1.09	0.86	1.10	0.88	1.11	0.88	1.09	0.88
	(0.35)	(0.44)	(0.34)	(0.43)	(0.34)	(0.52)	(0.35)	(0.55)	(0.35)	(0.53)	(0.34)	(0.53)

Father White[1]	1.06	1.63	1.07	1.67	1.08	1.82	1.06	1.79	1.06	1.87	1.08	1.80
	(0.42)	(1.01)	(0.42)	(1.03)	(0.43)	(1.09)	(0.42)	(1.06)	(0.42)	(1.12)	(0.43)	(1.09)
Father other race[1]	1.35	0.94	1.37	0.98	1.37	1.09	1.36	1.08	1.35	1.11	1.37	1.04
	(0.73)	(0.86)	(0.75)	(0.89)	(0.75)	(0.94)	(0.75)	(0.95)	(0.72)	(0.96)	(0.74)	(0.91)
Mother high school degree[2]	0.84	0.98	0.83	0.97	0.83	1.00	0.85	1.03	0.83	1.02	0.82	1.00
	(0.18)	(0.28)	(0.18)	(0.28)	(0.18)	(0.29)	(0.18)	(0.30)	(0.18)	(0.30)	(0.18)	(0.29)
Mother some college[2]	1.51	1.06	1.48	1.03	1.48	1.02	1.47	1.00	1.51	1.03	1.48	1.05
	(0.39)	(0.41)	(0.38)	(0.40)	(0.38)	(0.40)	(0.38)	(0.39)	(0.39)	(0.40)	(0.38)	(0.41)
Mother college degree[2]	0.39	0.83	0.39	0.79	0.39	0.81	0.39	0.82	0.40	0.78	0.39	0.83
	(0.27)	(0.61)	(0.26)	(0.59)	(0.26)	(0.63)	(0.26)	(0.61)	(0.27)	(0.64)	(0.26)	(0.64)
Mother religious	1.07	0.98	1.08	0.98	1.08	0.98	1.06	0.95	1.08	0.98	1.08	0.98
	(0.19)	(0.23)	(0.19)	(0.23)	(0.19)	(0.23)	(0.19)	(0.23)	(0.19)	(0.23)	(0.20)	(0.23)
Mother working (age 1)	0.80	0.76	0.80	0.75	0.80	0.69	0.82	0.72	0.80	0.70	0.80	0.70
	(0.15)	(0.20)	(0.15)	(0.20)	(0.15)	(0.19)	(0.15)	(0.19)	(0.15)	(0.19)	(0.15)	(0.19)
No. kids in household	0.91	1.02	0.90	1.01	0.90	1.02	0.90	1.02	0.91	1.03	0.91	1.03
	(0.068)	(0.096)	(0.067)	(0.095)	(0.067)	(0.098)	(0.067)	(0.097)	(0.068)	(0.097)	(0.068)	(0.100)
Grandparent in household	0.95	0.92	0.96	0.93	0.96	0.99	0.98	1.04	0.95	1.00	0.96	0.98
	(0.20)	(0.26)	(0.20)	(0.26)	(0.20)	(0.28)	(0.21)	(0.30)	(0.20)	(0.29)	(0.20)	(0.28)
Mother excellent health	0.47**	0.34**	0.47**	0.34**	0.47**	0.34**	0.47**	0.33**	0.47**	0.34**	0.47**	0.34**
	(0.098)	(0.11)	(0.098)	(0.11)	(0.099)	(0.11)	(0.098)	(0.11)	(0.098)	(0.11)	(0.098)	(0.11)
Mother depressed (age 1)	0.97	0.78	0.94	0.74	0.94	0.78	0.92	0.75	0.98	0.78	0.94	0.82
	(0.25)	(0.27)	(0.24)	(0.26)	(0.24)	(0.28)	(0.24)	(0.26)	(0.26)	(0.27)	(0.25)	(0.29)
Mother married	0.73	0.96	0.73	0.96	0.73	0.96	0.75	1.03	0.73	0.96	0.73	0.96
	(0.19)	(0.32)	(0.19)	(0.33)	(0.19)	(0.32)	(0.19)	(0.35)	(0.19)	(0.33)	(0.19)	(0.32)
Mother cohabiting	0.69	0.97	0.68	0.96	0.68	0.95	0.69	0.99	0.69	0.97	0.68	0.96
	(0.14)	(0.26)	(0.14)	(0.26)	(0.14)	(0.26)	(0.14)	(0.27)	(0.14)	(0.27)	(0.14)	(0.27)
Constant	0.77	0.10**	0.72	0.094**	0.71	0.067**	0.73	0.065**	0.78	0.065**	0.73	0.074**
	(0.43)	(0.073)	(0.41)	(0.067)	(0.41)	(0.047)	(0.42)	(0.045)	(0.45)	(0.046)	(0.42)	(0.052)

[1]Ref: White father; [2]Ref: Mother less than high school degree. Robust standard error in parentheses. ** p<0.01, * p<0.05

Table 4: Relative Risk Ratios of Good/Fair/Poor Compared with Excellent Health from Models Including Poverty Interactions with Hispanic Mothers' Nativity. Fragile Families Data. N=814.

	Relative Risk Ratios of Good/Fair/Poor Health vs. Excellent Health					
	(1)	(2)	(3)	(4)	(5)	(6)
Total poverty	1.85**	1.23	1.49**	1.50**	1.43*	1.43*
	(0.23)	(0.17)	(0.22)	(0.22)	(0.22)	(0.22)
Total poverty *U.S. born	0.59**		0.58**	0.56**	0.59**	0.57**
	(0.10)		(0.097)	(0.096)	(0.099)	(0.098)
Total Poverty *Mexican origin		1.44*	1.47*	1.45*	1.42*	1.38
		(0.25)	(0.25)	(0.25)	(0.25)	(0.25)
Ever free food				1.92*		2.09**
				(0.54)		(0.59)
Total uninsured					1.24*	1.29*
					(0.13)	(0.14)
Mother Mexican origin	0.70	0.33*	0.31**	0.31**	0.31**	0.31*
	(0.17)	(0.15)	(0.14)	(0.14)	(0.14)	(0.14)
Mother U.S. born	0.83	0.26**	0.86	0.89	0.88	0.91
	(0.38)	(0.069)	(0.38)	(0.40)	(0.39)	(0.41)

Health status category 2 and all controls included but not shown for brevity.
Robust standard error in parentheses. ** p<0.01, * p<0.05