Early childhood economic disadvantage and the health of Hispanic children

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Abstract

This research provides a longitudinal view of early childhood economic deprivation and its associations with health among young Hispanic children born in the United States. Of additional interest is whether economic deprivation is associated with child health similarly across all Hispanic children or whether associations differ by maternal nativity or country of origin. Fragile Families and Child Wellbeing data and multinomial logistic regression are used to estimate the effects of total years in poverty, material hardship, and lack of health insurance on Hispanic children's health status at age 5 and change in health status between ages 1 and 5. Results show that multiple measures of early childhood economic deprivation have additive negative associations with Hispanic child health, and that living more years in poverty is associated with declining health status among young Hispanic children. Interaction effects indicate that early childhood poverty has stronger associations with lower age 5 health status and declining health between ages 1 and 5 for children with foreign-born Hispanic mothers than for those with native-born Hispanic mothers. No differences were found in the associations between economic deprivation and child health by maternal country of origin. These results suggest an important role of economic resources for protecting Hispanic child health, and that poor Hispanic children with immigrant mothers may be at particularly high risk of developing health problems as they move out of infancy and into early childhood.

Keywords

Poverty; Fragile families; Child health; Immigrant health; Hispanic paradox; U.S.A

Introduction

Currently, 23% of U.S. children are Hispanic and by 2050 the Hispanic child population is expected to equal the white child population (Federal Interagency Forum on Child and Family Statistics, 2010). Children in our largest ethnic minority group are also some of the most disadvantaged in the country. Recent statistics indicate that Hispanic children are more likely than white or African American children to have poor 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 following their

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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).

Economic deprivation may play a key role in the emerging health disadvantage of Hispanic children. 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). When immigrant status is considered, Hispanic children with foreign-born parents are least likely to have health insurance (Hamilton, Hummer, You, & Padilla, 2006), are more at risk for hunger (Kersey, Geppert, & Cutts, 2007), and are more likely to live in poverty than those with U.S.-born parents. Of further concern is the lack of social support (including government services) and undocumented status of many immigrant parents, which may limit their ability to protect their children's health during difficult economic periods.

However, research to date has focused on the immigrant health advantage among Hispanics, suggesting that children with foreign-born Hispanic parents (and parents with less time in the U.S.) may have fewer health risks than those with U.S.-born Hispanic parents. Three main explanations have been positive for the Hispanic immigrant health paradox: (1) that immigrants are selectively healthier than their U.S. counterparts (i.e., the healthiest individuals migrate); (2) that there is selective reporting or out migration of the least healthy Hispanics (a data quality issue); and, (3) that immigrants' cultural norms and behaviors protect their health, but this effect decreases with time in the U.S. (an acculturation argument) (Franzini, Ribble, & Keddie, 2001). Although there has been some support for each proposition, the cultural perspective is often the main theory behind differences in foreign-born and U.S.-born Hispanic mothers' birth outcomes and infant health (Hunt, Schneider, & Comer, 2004). This theory suggests that Hispanic cultural norms of strong social and familial ties and maternal health behaviors, protect the health of Hispanic infants and children. Hispanic mothers born in the U.S., although sharing the Latino heritage, may be less connected to these cultural protective factors than Hispanic mothers born in Latin America. Further, the acculturation perspective suggests that the longer mothers (and their children) live in the U.S. and are exposed to U.S. norms and behaviors, the higher the risk of losing protective and gaining risky behaviors with implications for worsening health status (Abraido-Lanza, Chao, & Florez, 2005; Clark & Hofsess, 1998).

Empirical studies supporting these ideas have found that foreign-born Hispanic mothers have healthier behaviors (less prenatal smoking, higher birth weight, longer breastfeeding, and more immunizations) and provide better diets for their children (Flores & Brotanek, 2005; Lora, Giraud, Davy, & Driskell, 2006; Mazur, Marquis, & Jensen, 2003) despite their low socioeconomic position. Accounting for potential data quality issues debated in past research (Palloni & Morenoff, 2001), there is evidence that infants born to Hispanic (particularly Mexican) mothers have lower mortality rates in the first few weeks after birth (when return migration is unlikely) than those born to non-Hispanic white mothers and U.S.-born Mexican mothers (Hummer et al., 2007). Selective return migration may account for some of these noted health differentials, particularly in periods of the life course beyond

infancy and in relation to findings of negative acculturation over time (Ceballos & Palloni, 2010).

The Hispanic health paradox among children has been less studied than among infants. One recent study found that five-year old children with foreign-born Mexican mothers did not have significantly different health than children with non-Hispanic white mothers (Padilla, Hamilton, & Hummer, 2009). Another study indicated that immigrant children with foreign-born mothers had worse heath status than those with U.S.-born mothers, net of other factors (Chilton et al., 2009). The most recent evidence suggested that differences in the prevalence of poor child health conditions by child immigrant generation depended on the health condition studied (Hamilton, Cardoso, Hummer, & Padilla, 2011). Thus, although Hispanic health research posits that Hispanic children born to immigrant mothers may have a health advantage in infancy over those with U.S.-born Hispanic mothers, the limited research to date suggests that this advantage may be less prevalent as children move beyond infancy.

In addition to being limited by a focus on infants, the Hispanic health literature has been criticized for the lack of direct attention to the impact of socioeconomic status (SES) and other structural factors on child health (Hunt et al., 2004). Increased risk of poor health as children age may be explained by the negative acculturation process, but to do so requires taking into account the economic experiences of immigrant families over time. Further, although SES measures are used as controls in models of Hispanic health, there has been little work aimed at understanding how economic deprivation may affect the health of Hispanic children differently for those with foreign-born and U.S.-born mothers.

To address these gaps in the literature, this study assesses how economic deprivation in the first 5 years of life is associated with Hispanic children's health status at age 5 and change in health status between ages 1 and 5. Importantly, this study includes measures of material deprivation and access to health insurance, in addition to poverty status, to provide a more complete assessment of the types of economic deprivation that may impact Hispanic child well-being (Aber, Bennett, Conley, & Li, 1997). Of particular interest in this study is how mother's nativity moderates these effects. If children's health is protected from their low structural position in immigrant compared with native U.S. Hispanic families (due to cultural factors or selectivity), we would expect to see less of an impact of economic deprivation on the health of children with foreign-born compared with U.S.-born Hispanic mothers. If, however, Hispanic children's health cannot be buffered from the higher levels of stress and related disadvantages in immigrant families by cultural advantages, economic deprivation may have stronger negative effects on the health of Hispanic children with foreign-born mothers compared to those with U.S.-born mothers.

These are important research questions to address to provide a better understanding of the social determinants of child health in a large and diverse ethnic group in the U.S. The findings also inform broader research on child health among immigrants, and may motivate further research in other settings where immigrant child health develops within social and immigrant policy contexts distinct from those in the U.S.

Methods

Data and sample

The study data come from the Fragile Families and Child Well-being Study, a longitudinal study of almost 5000 children born in large U.S. cities in 1998–2000. Since the study uses publically-available and de-identified data it was exempt from ethics board review. Data were collected through in-person interviews with mothers in the hospital immediately after the focal children's birth, and through telephone interviews when the children were 1, 3, and 5 years old (see Reichman, Teitler, Garfinkel, & McLanahan, 2001 for a detailed discussion). The study sample consists of children born to Hispanic mothers ($n = 1342$), of which 258 were missing age 5 health status and 353 were missing either age 1 or age 5 health status (needed for the change models). An additional 285 cases were missing independent variables. Neither age 1 nor age 5 child health status differed significantly between those with missing data and those with full independent variable data. To avoid dropping these additional cases due missing independent variable information, I use multiple imputation (Allison, 2008). The results did not differ between models run with imputed and non-imputed data.

The final analytical sample is 1084 for the age 5 models and 989 for the change between age 1 and age 5 models. Of the initial baseline sample of children born to Hispanic mothers, those excluded from the sample due to missing health data were more likely to be poor at birth and were more likely to have foreign-born mothers. There was no difference in health at birth (low birth weight) between those who left the survey and those who remained. Children with foreign-born mothers who attritted between age 1 and age 5 ($n = 95$) had a slightly higher mean age 1 health status (higher = worse health) than those who remained in the sample through age 5 (there was no difference for children with U.S.-born mothers). This suggests a possible underestimation of the level of poor health among children with foreign-born Hispanic mothers, although the difference was small (mean 1.98 vs 1.81) and just reached significance at $p < 0.04$. There was no statistical difference between the missing cases and the analytical sample by mother's country of origin (Mexican vs. non-Mexican).

Key measures

The dependent variable utilized in this study is maternal-rated child health (MRCH) status. 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 et al, 2006; Idler & Benyamini, 1997; Idler & Kasl, 1995). MRCH has been utilized extensively in social science and health research, and has been found to be associated with other indicators of child health, including prior diagnosis of health conditions, chronic health problems, low birth weight, and child injuries (Crandall, Sridharan, & Schermer, 2010; Sparks, 2009; Stein, Siegel, & Bauman, 2010).

To measure MRCH (at child ages 1 and 5), the child's mother was asked: "Overall, how would you rate your child's health? Excellent, very good, good, fair or poor?" Due to the few cases reported as fair or poor ($n = 28$), the final child health variable was collapsed into three categories (1 = excellent, 2 = very good, and 3 = good/fair/poor). The first dependent

variable is this three-category measure at age 5, and a second dependent variable measures change in child health status between ages 1 and 5. For use in the analysis, I categorize the change variable to compare children whose health worsened or improved with those who had the same health status in both waves (the reference group). Most of the stable group was either stable excellent or stable very good health, with only 63 children in the stable good/fair/poor health category. Separating out the small stable good/fair/poor health group did not change the results. Models using the change dependent variable allow for assessing how economic deprivation is associated with declining health status during this critical developmental period. They also reduce concerns about translational differences in the child health reports between immigrant and native Hispanic mothers (Viruell-Fuentes, Morenoff, Williams, & House, 2011) because the models predict change in health status within the same child across two waves.

Because research suggests that multiple types of economic deprivation and measures at multiple time points should be used to better capture household economic status and its associations with child health and development (Aber et al., 1997), I employ several longitudinal measures of economic deprivation. For each survey wave, I defined economic deprivation as follows: poverty as household income below the national poverty line; food hardship as receiving free food in the past year due to lack of resources; housing hardship as moving in with others, being evicted, living in a shelter, or not paying the full mortgage/rent in the past year; utilities hardship as not paying a bill, borrowing money from a friend to pay a bill, having the telephone shut off, or having the gas/electric shut off in the past year; and, lacking health insurance as the mother reporting not having health insurance for herself or her child at the time of the survey. I then sum the total waves that a household experienced these conditions to produce the following early childhood economic deprivation variables: total waves in poverty (assessed birth-age 5), total waves received free food; total waves experiencing a housing hardship; total waves experiencing a utilities hardship (with hardships assessed at ages 1–5); and total waves lacking health insurance (assessed birth-age 5). Because recent research suggests various aspects of hardship fit better as distinct components rather than as an overall measure (Heflin, Sandberg, & Rafail, 2009), I utilized separate measures of food, housing, and utilities hardship in the analytical models.

To assess maternal nativity and country of origin, I created two dummy variables: whether the mother was born in the U.S. versus foreign-born; and, whether the mother was born in Mexico or another Latin American country (i.e. non-Mexican origin). Although Puerto Rico is part of the U.S., I coded mothers born in Puerto Rico as foreign-born due to the immigrant-like challenges faced by those migrating from Puerto Rico to mainland U.S. Initial models showed that Hispanic child health did not differ among foreign-born mothers by the number of years the mother had been in the U.S. Thus, the main nativity variable used in the final models is U.S.-born vs. foreign-born. For maternal nativity and maternal country of origin, I assess both the main effects and the interaction effects with economic deprivation variables.

Statistical methods

I use multivariate, multinomial logistic regression models (programmed and run in STATA) to assess the associations between household economic deprivation and children's health status. The first model includes only poverty, with subsequent models adding the hardship and insurance measures. Although multicollinearity can be a problem, the poverty, free food and insurance variables were correlated at $r = 0.4$ or less. The highest correlations were between the housing and utilities hardship measures ($r = 0.53$); however, entering them into the models separately did not change the results.

In an effort to reduce biases due to unobserved differences that may account for the associations between economic deprivation and child health, I include the following control variables in the models: child characteristics (gender, age, low birth weight, living with the mother full-time), maternal characteristics (age at child's birth, self-rated health, depression, prenatal health behaviors, education, religiosity, work status), father's race, and household characteristics (family structure, live-in grandparent, number of children at birth and age 5). Two important control variables are highlighted here: low birth weight and maternal self-rated health. Controlling for low birth weight ensures that the association of economic deprivation with early childhood health is assessed net of prenatal differences. Maternal self-rated health at baseline is included to reduce the confounding effects of maternal health and to control for differences (translational and cultural) in how mothers rate their children's health.

The statistics and model results shown are unweighted; thus, the descriptive statistics are not representative of Hispanic children in urban areas. However, the coefficients and standard errors in the regression models should not be affected by non-weighting, since the models control for characteristics of the mothers that were used in creating the weights (Winship & Radbill, 1994), namely: family structure, maternal race (all Hispanic in this sample), maternal age, and SES (Carlson, 2008). This approach has been followed in other recent studies using the Fragile Families data (Bzostek & Beck, 2011; Harknett & Hartnett, 2011; Hohmann-Marriott & Amato, 2008). As also recommended in the literature, I calculate robust standard errors (Winship & Radbill, 1994).

I present the results as relative risk ratios (exponentiated coefficients), which represent the average increased risk of being in a given child health category compared to the reference group for each additional year economic deprivation is experienced. I model both the main effects of the deprivation measures and their interactions with the maternal nativity and country-of-origin variables to assess whether economic deprivation has a distinct effect on children of foreign-born vs. U.S.-born and Mexican vs. non-Mexican mothers. Because of the diversity within this Hispanic sample, maternal nativity and country of origin variables were not highly correlated ($r = 0.03$) and could be entered in the model together to distinguish nativity from country-of-origin effects. In all models, ratios greater than one indicate positive associations, while ratios below one indicate negative associations. I assessed statistical significance of the main and interaction effects through two-tailed tests of $p < 0.05$.

Results

The sample descriptive statistics are presented in Table 1 for Hispanic children with valid age 5 health data. Of the sample mothers, 40% were born in a Latin American country (the other 60% were U.S. born), and 60% were of Mexican heritage (with a similar percentage of Mexicans being foreign-born and U.S.-born). Additionally, most sample fathers (84%) were Hispanic, and 60% were U.S. born. Father's nativity is not included in the analysis because it is too highly correlated with maternal nativity ($r = 0.7$). However, inclusion of the variable in the models did not change the economic deprivation or interaction results. Reflecting the low socioeconomic status of this sample almost 50% of Hispanic mothers had less than a high school degree, and 31% of the children were born to single mothers. Low birth weight, an indicator of poor health at birth, occurred in 6% of the children, which is similar to the Hispanic national average in 1998–2000 (U.S. Department of Health and Human Services, 2009). Indicators of maternal health illustrated that only 24% of mothers rated their health as excellent at the time of the birth, and 14% reported symptoms of depression when the child was 1 year old (Table 1).

Table 2 shows the distribution of maternal-rated child health (MRCH) status at age 5 and change in MRCH between ages 1 and 5 for the full sample and by maternal nativity and country of origin. Children with Hispanic immigrant mothers were significantly more likely to have good/fair/poor MRCH at age 5 and to be declining in health status between ages 1 and 5 compared to children with U.S.-born Hispanic mothers. Children with Mexican-origin mothers did not differ significantly in age 5 MRCH from those with non-Mexican mothers, but were less likely to be declining in health status between ages 1 and 5 than children with non-Mexican mothers (Table 2).

Table 2 also indicates the extent of economic deprivation in this sample of Hispanic children. On average, the sample children lived in poverty two of the four years when poverty was assessed, and almost 40% lived in poverty three or more times between birth and age 5. Children with foreign-born and Mexican mothers experienced over 2 years of poverty, on average, significantly more than children with U.S.-born and non-Mexican mothers. Children with foreign-born or Mexican mothers were also more likely to live below the poverty line during multiple years (three or four times).

In terms of material hardship, approximately 21% of the full sample received free food, 13% experienced housing hardship two or more times, and 33% experienced utilities hardship two or more times between ages 1 and 5. Unlike experiencing poverty, Hispanic children with U.S.-born mothers experienced more housing and utility hardships than those with foreign-born mothers. Lack of health insurance, an important hardship that may have more direct implications for children's health, occurred more often among children with foreign-born and Mexican mothers than among children whose mothers were U.S.-born or non-Mexican (Table 2).

Table 3 provides the results from the regression models estimating the associations between economic deprivation and child health at age 5. The results are presented as relative risk ratios (exponentiated coefficients) and the reference group for all models is children in

excellent health at age 5. All control variables are included in these models, but not reported for brevity.

Model 1, Table 3 shows the negative impact of cumulative poverty on Hispanic child health at age 5: each year lived in poverty increases the risk of being in very good health by 17% and good/fair/poor health by 33% compared with excellent health, holding constant socio-demographic characteristics and maternal behaviors. Model 2 further illustrates that various measures of material hardship are associated with worse Hispanic child health. Food hardship increased the risk of good/fair/poor compared with excellent child health by 57%, while each year of utility hardship increased the risk of very good compared with excellent child health by 26%. Each year without health insurance increased the risk of good/fair/poor health compared with excellent health by 24%. Comparing Models 1 and 2, it is evident that some of the effect of poverty works through these hardships: the relative risk ratio for poverty declined from 1.17 to 1.14 for very good health status and from 1.33 to 1.23 for good/fair/poor health status when the hardship measures were included (Table 3).

Table 3 also shows that maternal nativity (foreign-born vs. U.S.-born) is not associated with child health status when controlling for economic deprivation, other socio-demographic factors and maternal behaviors (Models 1 and 2). Maternal country of origin does have a significant effect, where children born to non-Mexican mothers have a 74% lower risk of being in the worst (good/fair/poor) health category at age 5 than children with Mexican mothers (Model 2, Table 3).

Models 3 and 4 add the *poverty*maternal nativity and poverty*-maternal country of origin* interaction effects to the base models. Of the economic deprivation measures, only poverty had a significant interaction with maternal nativity or country of origin, thus the other interaction effects tested were not included in the final models. Model 3 indicates the significant moderating effect of maternal nativity on the association between poverty and good/fair/poor child health status. In this model, the coefficient on poverty represents the association between poverty and child health when maternal nativity equals zero (i.e., the effect for children with foreign-born mothers). The 1.50 significant risk ratio indicates that each year living in poverty increases the risk of being in good/fair/poor health compared with excellent health by 50% for children with foreign-born mothers. Although poverty also increases the risk of children being in very good compared with excellent health by 25% among children with foreign-born mothers, the interaction effect is not significant when comparing these two health categories. When the interaction effect is added to the main effect of poverty (not shown in the table), the result indicates that the association of poverty with MRCH for U.S.-born Hispanic children is small and insignificant for both very good (RRR = 1.09) and good/fair/poor (RRR = 0.95) health status.

Adding the *poverty*mother non-Mexican* interaction term in Model 4 does not change the *poverty*mother U.S.-born* interaction effect, but does alter the poverty effect. The main effect of poverty in Model 4 indicates the effect of poverty on child health for those with foreign-born, Mexican mothers (i.e., when both maternal nativity and maternal country of origin equal zero). Although the effect on good/fair/poor health is larger than in Model 3 (1.66 compared to 1.50), the *poverty*mother non-Mexican* interaction effect is insignificant,

indicating no significant difference in the association between poverty and child health by maternal county of origin (Model 4, Table 3). Further modeling indicated that the *poverty*mother non-Mexican* interaction term was not statistically significant even when *poverty*mother U.S.-born* was not included.

Table 4 presents the findings from similar models predicting change in MRCH between ages 1 and 5. The two columns in each model provide comparisons between declining and improving health status with the reference group (stable health between ages 1 and 5). Model 1 shows that increasing poverty is associated with an increased risk of worsening health status (28% higher risk) compared to remaining stable. However, experiencing less poverty did not have a significant effect on improving health status (insignificant RRR for poverty in Model 1, column 2). Model 2 shows similar results when the hardship measures are included, and that none of the hardship effects are significantly associated with changes in MRCH over time. Neither maternal nativity nor maternal country of origin are associated with changes in MRCH between ages 1 and 5 (Models 1 & 2, Table 4).

When the *poverty*maternal nativity* interaction effect is included (Model 3, Table 4), the results show that the association between poverty and declining child health is smaller for children with U.S.-born than foreign-born Hispanic mothers. The main effect of poverty in this interacted model represents the effect of poverty on children with foreign-born mothers, for whom each year living in poverty increases the risk of being in declining compared with stable health by 58%. Model 3 further indicates that maternal country of origin does not moderate the association between poverty and changes in child health, which is consistent with the results from the age 5 health status models.

In terms of the main effects of maternal nativity and country of origin on change in child health, across all models maternal nativity is not associated with declining or improving child health. When the *poverty*mother U.S.-born* interaction effect is included, however, the maternal country of origin effect becomes significant. Model 3 shows that children with non-Mexican mothers are 44% more likely than children with Mexican mothers to be declining rather than stable in health status. Model 5 further shows that when *poverty*mother non-Mexican* is included, the non-Mexican mother effect becomes larger. In Model 5 the *mother non-Mexican* RRR represents the association between *mother non-Mexican* and child health for the non-poor (those with total poverty = 0). The RRR for the *mother non-Mexican* effect in the change models is somewhat contradictory to the cross-sectional results that suggested children with non-Mexican mothers had a lower risk of being in good/fair/poor health than those with Mexican mothers. It may be that the decline in health status between ages 1 and 5 occurring in this group is mainly from excellent to very good health rather than a decline into the worst health category (good/fair/poor).

Discussion

Hispanic children represent one of the fastest growing, most economically-vulnerable populations in the U.S. However, we know little about how early life economic deprivation impacts the health of these children, or whether the effects are similar across key subgroups within the Hispanic population. To address this gap in our understanding of Hispanic child

health in the U.S., this study utilized longitudinal measures of poverty, material hardship and health insurance to assess how economic deprivation in the first 5 years of life was associated with maternal-rated child health (MRCH) at age 5 and change in health status between ages 1 and 5 among Hispanic children. The moderating roles of maternal nativity and country of origin were considered to assess potential differences in the effects of economic deprivation on MRCH among Hispanic children with foreign-born vs. U.S.-born and Mexican vs. non-Mexican Hispanic mothers.

Consistent with prior research on poverty and child health among all children in the U.S. (Brooks-Gunn & Duncan, 1997; Case, Lubotsky, & Paxson, 2002; Victorino & Gauthier, 2009), the findings illustrated that economic hardship is an important predictor of Hispanic child health. Total waves of poverty was associated with worse MRCH at age 5 and with declining health status between ages 1 and 5. Receiving free food, experiencing utilities hardships, and lacking health insurance were also associated with worse MRCH at age 5, independent of poverty. However, none of these hardship measures were associated with changes in child health between ages 1 and 5.

Importantly, the effects of poverty were moderated by maternal nativity, but not country of origin. The significant interaction effect between poverty and maternal nativity illustrated that the age 5 health association with poverty was significant only for children with foreign-born Hispanic mothers. The health change models further indicated that poverty increased the risk of declining health status only among children with foreign-born Hispanic mothers. Poverty had no association with MRCH (or change in MRCH) among those with U.S.-born mothers. The lack of significant maternal country of origin interaction effects suggested that the effects of poverty and material hardship on MRCH were similar for Hispanic children with Mexican and non-Mexican mothers.

Due to the Fragile Families design, these findings are limited in generalizability to urban and relatively disadvantaged Hispanic children born in the U.S. Small sample size is an issue, particularly when estimating the interaction models. Further, these results should be considered associations rather than causal relationships, since unobserved confounders are not accounted for in the models. Of particular concern is that systematic and unobserved biases in mothers' reporting of child health may have not been fully accounted for here. However, these concerns have been lessened by controlling for mothers' self-rated health, a consideration of change in health status within children, and by focusing only on Hispanics rather than comparing Hispanics to other racial groups. Further, maternal nativity was unrelated to MRCH in the multivariate models, suggesting that differences due to reporting/ translation were likely accounted for by the control variables.

A final concern is the potential selectivity of the sample, where children with immigrant mothers were more likely to be lost to follow up by age 5 than those with U.S.-born mothers; and, that those children with foreign-born mothers lost to follow up between ages 1 and 5 were less healthy than the children with foreign-born mothers who remained in the sample. If a strong health advantage were found for children with foreign-born mothers (which was not the case) this may have been explained by the selectively healthier immigrant group who remained in this study. The loss of less healthy immigrant children

suggests that this study may underestimate health *disadvantage* among children with foreign-born Hispanic mothers.

Notwithstanding these limitations, this research is an important contribution to our understanding of the risks to Hispanic children's well-being and the origins of health disadvantages in this large and vulnerable group in the U.S. Early childhood is an important period to study since the largest challenges to ensuring healthy development among Hispanic children may occur during this period, when children are no longer protected by breastfeeding, are mobile and more susceptible to household risks, and require more economic resources (food, clothing, medicine, and other health inputs) for care. Early childhood is also a critical developmental period when poor health may have a lasting effects on later health and socioeconomic status (Case, Fertig, & Paxson, 2005; Palloni, 2006). Thus, addressing early childhood health issues in poor families (and particularly those with immigrant parents) may be key to breaking the intergenerational cycle of poverty.

This research also informs the ongoing debate about the potential Hispanic child health paradox in the U.S. Contrary to what has been found among infants, the results here suggest that maternal nativity has no significant effect on the health of Hispanic children in early childhood. However, economic deprivation (over multiple years and across various measures), was found to be a strong predictor of Hispanic child health. This suggests the importance of structural rather than cultural factors as determinants of Hispanic child health. Further, the stronger association between poverty and health among children with foreign-born mothers illustrates the higher risk that living in poverty presents to children with Hispanic immigrant mothers compared to those with Hispanic U.S.-born mothers. Material hardship and lack of health insurance in early childhood, however, operated with equal risk for poor health outcomes among the young Hispanic children in this urban sample.

Subsequent research should build on these findings to further assess how other types of household resources may affect Hispanic child health and consider other measures of health status, as well as the impact of economic deprivation on child health in other immigrant groups. It is also important to study economic deprivation and child health outside of the U.S., where social and immigration policies are distinct. A recent review in Australia highlighted the multiple structural disadvantages faced by children in immigrant families (Katz & Redmond, 2010), but it is not clear whether the implications for child health would be similar in that setting. Further, although European research has found negative psychological adaption among immigrant youth, little is known about economic deprivation and physical health among children in immigrant families across different European countries (Sam, Vedder, Liebkind, Neto, & Virta, 2008; van Geel & Vedder, 2011).

Important policy conclusions can be drawn from this study as well. The independent effects found for poverty, food insecurity, utilities insecurity, and lack of health insurance suggest that these are distinct disadvantages impacting Hispanic children's health, and that improving Hispanic child health is likely to require policies that address each of these factors. It is particularly troubling that the health of Hispanic children with foreign-born mothers may be more negatively affected by poverty because these children are more likely to experience long-term and more severe poverty than those from other racial/ethnic groups

in the U.S. Social policy efforts aimed at reducing poverty and improving poor children's well-being may be in vane if immigrant policies limit disadvantaged immigrant families' access to social and financial support. More attention should be paid to alleviating poverty and protecting child health in vulnerable immigrant groups in the U.S. and elsewhere.

Acknowledgments

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Table 1

Sample descriptives of children born to Hispanic mothers. Fragile families data. $N = 1084$.

Variables[a]	% or median[b]	Std. dev.	Min	Max
Child characteristics				
Male	51%			
Age in months	62	3.17	58	72
Low birth weight	6%			
Lives with mother full-time	98%			
Maternal nativity & country of origin				
Mother U.S.-born (vs. foreign-born)	59%			
Mother Mexican-origin (vs. non-Mexican)	60%			
Other maternal characteristics				
Age at child's birth	23	5.80	15	43
Self-rated excellent health status[c]	24%			
Depressed (at child age 1)	14%			
Less than high school degree	48%			
Has high school degree	27%			
Some college education	21%			
College graduate	4%			
Working (at child age 1)	47%			
Religious	40%			
Father's race				
Hispanic	84%			
Black	8%			
White	6%			
Other race	2%			
Household composition				
Number other children in household	1	1.25	0	6
Grandparent in household	26%			
Mother married to biological father	23%			
Mother cohabiting with biological father	46%			
Mother single	31%			

Data not weighted.

[a]Variables assessed at birth unless otherwise noted.

[b]Median, std. dev. and min/max provided for continuous variables; % of sample = 1 for dummy variables.

[c]Ref: very good, good, fair, or poor self-rated maternal health.

Table 2

Health and economic deprivation among children born to Hispanic mothers by nativity and Hispanic origin. Fragile families data.

	All Hispanic (N = 1084)	Mother's nativity		Mother's country of origin	
		Foreign-born (n = 456)	U.S.-born (n = 628)	Mexican (n = 632)	Non-Mexican (n = 452)
MRCH status at age 5					
% in excellent health	57	47	64	59	54
% in very good health	27	25	28	24	30
% in good/fair/poor health	16	28	8	17	16
Change in MRCH status age 1–5					
% declined in health	21	24	19	19	24
% improved in health	22	24	20	24	20
% stable good/fair/poor health	6	13	2	7	5
% stable very good/excellent health	51	39	59	50	51
Early childhood economic deprivation[a]					
Mean waves below poverty line (0–4)	1.91	2.14	1.73	2.04	1.73
% sample below poverty line 3+ waves	37	45	32	40	33
Mean waves received free food (0–3)	0.27	0.25	0.30	0.28	0.27
% sample ever received free food	21	18	23	22	20
Mean waves housing insecure (0–3)	0.53	0.42	0.61	0.52	0.55
% sample housing insecure 2 + waves	13	9	16	12	14
Mean waves utilities insecure (0–3)	1.07	0.84	1.24	1.08	1.07
% sample utilities insecure 2+ waves	33	25	39	33	33
Mean waves no health insurance (0–4)	1.15	1.52	0.93	1.34	0.95
% sample no health insurance 2+ waves	34	47	26	39	28

Data not weighted.

[a] Continuous variable means statistically different ($p < 0.05$) between foreign and U.S.-born Hispanic mothers except free food. Means statistically different between Mexican and non-Mexican origin mothers only for waves uninsured and waves in poverty.

Table 3

Relative risk ratios from multinomial regression of Hispanic child health status at age 5 on household economic deprivation birth to age 5. Fragile families data. $N = 1084$.

Variables	Model 1		Model 2		Model 3		Model 4	
	Reference group for all models = excellent health status age 5							
	V.G.	G/F/P	V.G.	G/F/P	V.G.	G/F/P	V.G.	G/F/P
Economic deprivation								
Poverty	1.17 * (1.03–1.33)	1.33 ** (1.12–1.57)	1.14 (1.00–1.31)	1.23 * (1.03–1.47)	1.25 * (1.03–1.52)	1.50 ** (1.21–1.87)	1.27 * (1.02–1.58)	1.66 ** (1.26–2.17)
Poverty * Mother U.S.-born					0.87 (0.69–1.08)	0.63 ** (0.47–0.85)	0.87 (0.69–1.08)	0.63 ** (0.47–0.84)
Poverty * Mother Non-Mexican							0.97 (0.78–1.20)	0.80 (0.59–1.09)
Received free food			1.07 (0.81–1.41)	1.57 * (1.10–2.22)	1.07 (0.81–1.42)	1.59 * (1.11–2.28)	1.07 (0.81–1.42)	1.57 * (1.10–2.26)
Utility hardship			1.26 * (1.05–1.50)	1.02 (0.81–1.29)	1.26 ** (1.06–1.50)	1.03 (0.81–1.30)	1.26 ** (1.06–1.50)	1.03 (0.81–1.30)
Housing hardship			0.88 (0.70–1.11)	1.07 (0.80–1.44)	0.88 (0.70–1.11)	1.07 (0.80–1.44)	0.88 (0.70–1.11)	1.07 (0.79–1.43)
No health insurance			1.01 (0.87–1.16)	1.24 * (1.04–1.47)	1.00 (0.87–1.16)	1.22 * (1.02–1.45)	1.00 (0.86–1.16)	1.20 * (1.01–1.43)
Maternal nativity & country of origin								
U.S.-born (*ref*: foreign-born)	1.32 (0.97–1.79)	1.04 (0.70–1.55)	1.33 (0.97–1.82)	1.14 (0.75–1.72)	1.35 (0.99–1.84)	1.17 (0.77–1.78)	1.41 (0.86–2.33)	1.83 (0.86–3.89)
Non-Mexican (*ref*: Mexican origin)	0.81 (0.57–1.17)	0.26 ** (0.17–0.41)	0.79 (0.55–1.14)	0.27 ** (0.17–0.43)	1.03 (0.59–1.77)	0.69 (0.32–1.49)	1.03 (0.60–1.78)	0.71 (0.33–1.51)
Log likelihood	−942		−932		−927		−926	

Confidence intervals in parentheses.

**
$p < 0.01$,

*
$p < 0.05$.

V.G. = very good health status; G/F/P = good/fair/poor health status.

Results not weighted. Robust standard errors calculated. Variables listed in Table 1 included as controls.

Maternal prenatal health behaviors; and, mother's work status, smoking, and household composition at child's age 5 also included as controls.

Table 4

Relative risk ratios of *Change* in Hispanic child health status age 1 to 5 and Household economic deprivation birth to age 5. Fragile families Data. *N* = 989.

Variables	Model 1		Model 2		Model 3		Model 4	
	Declined	Improved	Declined	Improved	Declined	Improved	Declined	Improved
Economic deprivation								
Poverty	1.28** (1.11–1.47)	1.10 (0.95–1.28)	1.24** (1.07–1.44)	1.11 (0.95–1.30)	1.58** (1.27–1.97)	1.15 (0.93–1.44)	1.75** (1.35–2.27)	1.08 (0.84–1.38)
Poverty * Mother U.S.-born					0.67** (0.52–0.87)	0.95 (0.74–1.22)	0.67** (0.52–0.86)	0.96 (0.75–1.23)
Poverty * Mother Non-Mexican							0.82 (0.63–1.07)	1.18 (0.91–1.52)
Received free food			1.01 (0.75–1.35)	0.85 (0.60–1.20)	1.01 (0.75–1.36)	0.85 (0.61–1.20)	1.00 (0.74–1.34)	0.87 (0.62–1.22)
Utility hardship			1.09 (0.90–1.32)	1.04 (0.85–1.27)	1.10 (0.90–1.33)	1.04 (0.85–1.28)	1.09 (0.90–1.33)	1.04 (0.85–1.28)
Housing hardship			1.07 (0.84–1.37)	1.05 (0.82–1.36)	1.07 (0.84–1.37)	1.05 (0.82–1.36)	1.07 (0.84–1.37)	1.05 (0.82–1.36)
No health insurance			1.05 (0.89–1.22)	0.94 (0.80–1.09)	1.03 (0.87–1.20)	0.94 (0.80–1.09)	1.01 (0.86–1.19)	0.95 (0.81–1.11)
Maternal nativity & country of origin								
U.S.-born (*ref*: foreign-born)	0.76 (0.51–1.15)	0.71 (0.48–1.05)	0.76 (0.51–1.15)	0.69 (0.47–1.02)	1.74 (0.89–3.40)	0.74 (0.40–1.37)	1.8 (0.92–3.51)	0.73 (0.39–1.35)
Non-Mexican (*ref*: Mexican origin)	1.37 (0.96–1.95)	0.84 (0.59–1.20)	1.39 (0.97–1.98)	0.82 (0.57–1.18)	1.44* (1.01–2.06)	0.83 (0.58–1.19)	2.16* (1.14–4.11)	0.60 (0.32–1.11)
Log likelihood	−919		−916		−912		−909	

Reference group for all models = children who did not change health status between ages 1 and 5

Confidence intervals in parentheses.

**
p < 0.01,

*
p < 0.05.

V.G. = very good health status; G/F/P = good/fair/poor health status.

Results not weighted. Robust standard errors calculated. Variables listed in Table 1 included as controls.

Maternal prenatal health behaviors; and, mother's work status, smoking, and household composition at child's age 5 also included as controls.