Is Socioeconomic Incorporation Associated with a Healthier Diet?

Dietary Patterns among Mexican-American Children

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Abstract

Prior research consistently shows that acculturation is associated with worse health among Mexicans, but little is known about whether socioeconomic mobility protects them from these adverse outcomes. In this paper, we explore whether and how children's nutrition is related to socioeconomic advancement among Mexican Americans. We specifically compare children in families with low versus medium socioeconomic status and explore whether these socioeconomic status patterns vary according to their parents' nativity. Our preliminary analyses of the 1999-2006 NHANES suggest that exposure to the United States is associated with a mixture of positive and negative outcomes. On the one hand, we see evidence of significant socioeconomic mobility between Mexican-American children of immigrants and children of natives. Additionally, we find strong evidence that Mexican-American children of immigrants have much healthier diets than non-Hispanic white children, consistent with prior research. On the other hand, these dietary advantages appear to be concentrated among poor immigrant families. Additional parental education does not appear to be related to better nutrition, and greater family income may even be associated with worse nutrition.

Introduction

A common theme in the assimilation literature is that acculturation processes vary considerably within and across immigrant generation groups. To put it simplistically, acculturation is posited to be associated with adverse outcomes among poor and disadvantaged groups, but with better outcomes among groups with greater socioeconomic resources and social capital (Abraído-Lanza, Armbrister, Flórez, and Aguirre 2006; Ahluwalia, Ford, Link, and Bolen 2007; Rumbaut 1994). We explore this idea using the example of diet quality among Mexican-American children.

Mexican immigrants compose the largest and most disadvantaged national origin group in the United States (Van Hook, Landale, and Hillemeier 2013). They and their children are extremely disadvantaged along multiple dimensions, including low educational attainment, high poverty levels, low English proficiency, and unauthorized legal status. Yet at the same time, a middle class has been emerging among Mexican Americans (Myers 2007; Vallejo 2012). Prior research consistently shows that acculturation is associated with worse nutrition among Mexicans (and several other groups) (Batis, Hernandez-Barrera, Barquera, Rivera, and Popkin 2011), but little is known about whether socioeconomic mobility protects them from these adverse outcomes.

In this paper, we explore whether and how children's nutrition is related to socioeconomic advancement among Mexican Americans. We specifically compare children in families with low versus medium socioeconomic status and explore whether these socioeconomic status patterns vary according to their parents' nativity. We distinguish children according to their parents' (versus their own) nativity given that parents have the greatest

control and influence on children's nutrition (Birch and Davison 2001). Although our data preclude us from following families over time, our cross-sectional analyses utilizing information on parents' nativity provide a first-time examination of the association between family socioeconomic status and children's dietary patterns. Our preliminary results suggest that exposure to the United States is associated with a mixture of positive and negative outcomes. While children's socioeconomic status clearly increases across generations, gains in socioeconomic status are not associated with better nutrition, and may, in fact, be associated with reductions in diet quality.

Background

To place our research in the context of the nutrition and health literature, Mexican-American children suffer from a high prevalence of obesity (Ogden, Caroll, Flegal, and Kit 2012) and, among later generations, nutritionally poor diets (Batis et al. 2011). Some observers have attributed the adverse weight and nutritional status of Mexican-American children to their low socioeconomic status (SES). This makes sense to some degree because Mexican-American children are the poorest and have the least educated parents among all major U.S. racial-ethnic groups (Van Hook, Landale, and Hillemeier 2013), and prior research shows strong associations between youth weight and low parental educational attainment (Goodman 1999; Goodman, Slap, and Huang 2003; Gordon-Larsen, Adair, and Popkin 2003; Martin 2008; Martin, Frisco, Nau, and Burnett 2012; Troiano and Flegal 1998; Wang and Zhang 2006; Zhang and Wang 2007) and low income (Miech, Kumanyika, Stettler, Link, Phelan, and Chang 2006). The inverse relation between obesity and SES is thought to reflect the relatively low price of calorie-dense,

nutritionally poor foods and the limited opportunities for physical activity and access to high-quality foods in poor communities (Drewnowski & Specter, 2004;Gordon-Larsen et al. 2006;Tabacchi et al. 2007).

But other ideas suggest that low socioeconomic status may not be responsible for Mexican-American children's dietary patterns. Assimilation theory and prior research suggests that immigrants and their children are protected from health risks by advantageous cultural practices and preferences. Thus poverty and low parental education may not pose serious threats to Mexican-American children's nutritional health, at least among the children of immigrants. Moreover, movement into the middle class may actually pose health risks to Mexican Americans if their family's upward mobility is accompanied by a rapid assimilation of U.S. consumption patterns, including dietary acculturation and unhealthy diets. It is important to note that most American youth eat rather unhealthy foods. For example, the item most frequently named in children's dietary recalls is soda, such that 47% of 5 to 9 year olds and 67% of 15 to 19 year olds drank soda at least once the previous day (authors' calculations). Thus, the socioeconomic incorporation of this group could even lead to worse – not better – diets. Given that such upward mobility generally occurs across immigrant generations (Bean and Stevens 2003; Vallejo 2012), parents' generational status in the U.S. is likely an important factor for understanding the association between socioeconomic status and diet practices among Mexican-American children.

Prior research clearly shows that U.S. exposure is associated with unhealthy shifts in diet among immigrants and their families (Akresh 2007; Ayala, Baquero, and Klinger 2008; Batis et al. 2011; Brown 2005; Dixon, Sundquist, and Winkleby 2000; Duffey, Gordon-Larsen, Ayala, and

Popkin 2008; Guendelman and Abrams 1995). But to our knowledge, no prior research has explored how this relationship varies by socioeconomic status among children of immigrants, but instead, simply controls for parents' education and/or income. This is problematic for several reasons.

First, assimilation theory suggests that the foods families eat should differ according to the parents' immigrant generation. Second, Mexican Americans are a heterogeneous population with regard to SES, especially across generation status. When coupled with the average SES differences between Mexican Americans and non-Hispanic whites, it is not clear what kinds of families are being compared with a simple control for family SES. Finally, as noted above, research on assimilation suggests that that the meaning and/or relative importance of low education and poverty for various child outcomes likely vary across parent' immigrant generation. Therefore, we study whether there is an interaction between immigrant generation and family SES for children's nutrition quality. We consider both absolute and relative differences in the quality of children's nutrition. On the one hand, we compare children's nutrition quality across generation/ethnicity groups among those of specific levels of SES. On the other hand, we consider whether and how increasing SES is associated with improvements in children's nutrition for each generation/ethnicity group. Finally, in our analyses we focus on comparisons involving only the bottom and middle portions of the education and family income distributions to ensure that we are making "apples-to-apples" comparisons across generation/ethnicity groups given the relatively low socioeconomic status of Mexican-American children of immigrants.

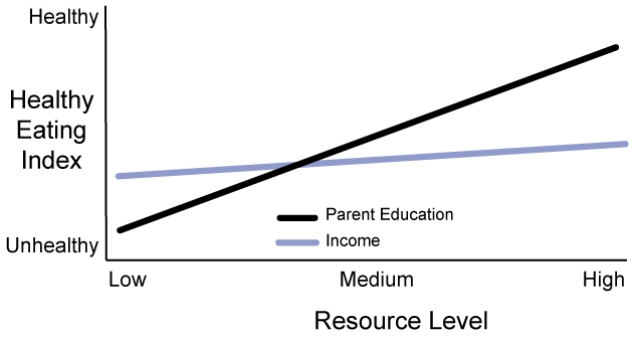
Research Expectations

Based on theory and a limited body of prior research, we develop expectations concerning the relationship between family socioeconomic status and diet. In doing so, we consider the likely association among U.S. children in general, and then consider how the relationship may differ between Mexican-American children of immigrants, Mexican-American children of natives, and white children. Additionally, we distinguish between parents' human capital (e.g., years of educational attainment) and family's financial capital (family income). On the one hand, increases in parental education can affect children's diet because parents' gain both general (Becker 1993) and specific health- and diet-related knowledge (Link, Northridge, Phelan, and Ganz 1998), as well as gain greater cognitive capabilities (Baker, Leon, Smith Greenaway, Collins, and Movit 2011), a cultural orientation to pursue additional information (Lareau 2003), and a sense of control to accomplish various goals (Mirowsky and Ross 2003). Family income, in contrast, provides parents with the ability to purchase health-related goods, such as groceries, meals out, equipment for physical activity, housing in neighborhoods of differential quality, health insurance, and more (Cawley 2004; Drewnowski and Specter 2004). Moreover, in the case of immigrant families, greater income is associated with greater contact with whites. Although the mechanisms by which these socioeconomic resources affect diet differ, we expect similar, overall patterns in the association between parental education and children's diet and between family income and children's diet. That said, we also consider instances where the effects of parental education and family income may differ.

Hypothesis 1: Resource Deprivation Model. We expect low parental education to be associated with poor nutrition and high parental education to be associated with better

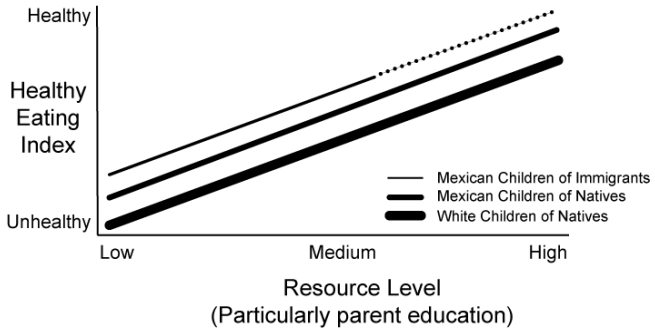
nutrition through a large set of mechanisms, as depicted in Hypothesis Figure 1. Further, we expect that parental education is probably the more important for child nutrition quality relative to family income (Martin, Frisco, Nau, and Burnett 2012). We therefore expect a strong positive relationship between parental education (shown in black in Hypothesis Figure 1) and diet quality, and a weaker or non-existent relationship between family income (shown in grey) and diet quality.

Hypothesis Figure 1.
Resource Deprivation Model



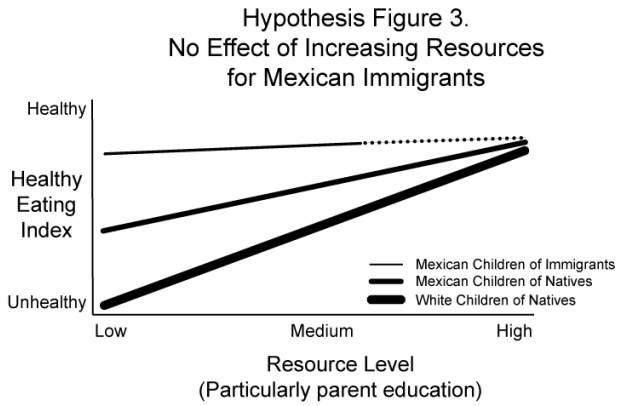
Hypothesis 2: Variation for Mexican-American Children of Immigrants: A Consistent Advantage. In immigrant families, children may be protected from the risks of low parental education and poverty due to cultural preferences for non-American foods, which tend to include more fruits and vegetables and less meat, sugar, and fat. In contrast, later generation children are not as well protected. If immigrant families also benefit from greater socioeconomic stuats, their dietary advantage may persist across the entire SES distribution. As shown in Hypothesis Figure 2, Mexican-American children of immigrants could have a better diet than Mexican-American children of natives and non-Hispanic white children of natives at all levels of parental education and income.

Hypothesis Figure 2.
Resource Deprivation Model
with Mexican Immigrant Variation



Note: Dotted line indicates where there is little data support in the resource distribution.

Hypothesis 3: Variation for Mexican-American Children of Immigrants: No Dietary Improvement with Increasing Resources. Alternatively, diet quality among children of immigrants may not be associated with socioeconomic status (particularly if ethnic advantages "trump" the influence of SES). Rather they could retain their healthy diet regardless of their socioeconomic status. In essence this would imply a dietary advantage for Mexican-American children of immigrants across the SES distribution, but a shrinking advantage as white children "catch up" to their peers with increases in parents' education and family income. Patterns for Mexican-American children of natives likely fall between these two groups, whereby, at very low levels of parental education and income, the diets of Mexican-American children of natives are not as good as their peers who are children of immigrants and they likely do not experience the same gains in nutritional quality as whites with increases in SES for several social and political reasons. These ideas are as shown in Hypothesis Figure 3.

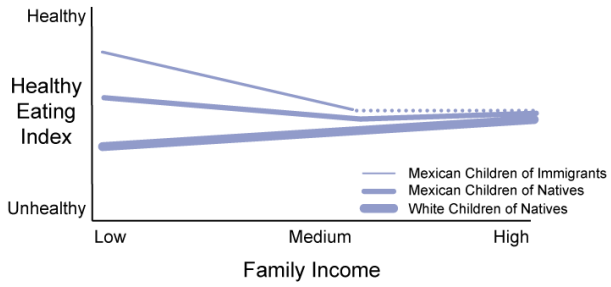


Note: Dotted line indicates where there is little data support in the resource distribution.

Hypothesis 4: Negative Acculturation Model for Mexican-American Children of Immigrants: This hypothesis focuses particularly on family income and diet quality, anticipating a different pattern for family income relative to parental education. Specifically, we hypothesize that additional income could actually lead to declines in the dietary quality of Mexican children of immigrants. One reason is that dietary acculturation may be accelerated among middle-class Mexican-American children. Mobility into the middle class (along with accompanying movement into middle class neighborhoods, schools, and workplaces) may dramatically increase interactions between children of immigrants with white natives. Children of immigrants often desperately want to fit in with their U.S. peers by wearing the same clothing, speaking the same language, and eating the same foods (Nguyen 2007). Similarly, adults from immigrant families often attempt to strip themselves of ethnic cultural markers in order to be accepted into white middle class educational and work settings (Alba and Nee 2003; Vallejo 2012). Thus, stereotypical American foods like burgers, fries, soda, and pizza may be appealing to children of immigrants, particularly among those whose families are more structurally incorporated. Another reason is that additional income can increase purchasing power. Especially in the middle range, income could be associated with changes away from

home-cooked Hispanic foods (which tend to be inexpensive but time-consuming to prepare) to greater consumption of snack foods, pre-processed foods, meat, and restaurant foods, and, thus, poorer diets. Overall, for a host of reasons, Hypothesis Figure 4 predicts a negative slope for income for the diet quality of Mexican-American children of immigrants as families move out of poverty, but a positive or flat slope across the income distribution for non-Hispanic white children of natives. If these patterns hold, Mexican-American children of natives likely fall between these two patterns, both in terms of the quality of their diet at the very lowest levels of parental education and family income and the relative slope across the income distribution. Regarding the latter, we can imagine that the pressure to fit in and adopt American foods is lower relative to the pressure felt by Mexican-American children of immigrants.

Hypothesis Figure 4.
Negative Acculturation with Movement
Out of Poverty for Mexican Immigrants



Note: Dotted line indicates where there is little data support in the resource distribution.

Our exploration of these various hypotheses makes two important contributions to the literature. First, because Mexican immigrant families tend to be poor and most studies exploring differences in dietary quality between immigrants and children of natives do not explore variations across the socioeconomic distribution, these studies implicitly focus on the bottom of the SES distribution. Our study recognizes and exploits the variation in SES, even among Mexican-American children of immigrants, to explore whether and how the links

between SES and diet vary across groups. For several reasons, we think the meaning and utility of additional resources may differ for Mexican-American children in different immigrant generations and relative to non-Hispanic white children of natives. Second, by explicitly attenuating to variation in SES and utilizing information on parents' nativity, we indirectly test whether structural incorporation across generations, and its general association with upward social and economic mobility, poses health risks for Mexican-American children.

In sum, we examine the association between SES and dietary quality using two measures of family socioeconomic status – parental education and family income. Moreover, we explore whether and how the SES-dietary quality association varies across three groups – Mexican-American children of immigrants, Mexican-American children of natives, and non-Hispanic white children of natives. Together, these analyses provide an initial examination into whether the structural incorporation of Mexican Americans – within and across generations – is associated with improvements or deteriorations in their children's dietary quality.

Methods

Data and Sample. We tested these ideas using the demographic and day 1 dietary recall data of the continuous National Health and Nutrition Examination Survey (NHANES). NHANES is a nationally representative, cross-sectional study conducted by the Centers for Disease Control and Prevention (CDC). We restricted our analysis to respondents who participated in the 4 continuous NHANES studies that occurred between 1999 and 2005. This restriction is made because there were changes made to the sampling frame of the NHANES in 2007 that impacted how Latino respondents were oversampled. In addition, adolescents are no longer

oversampled after 2007. Due to these and other changes in the sampling frame, NHANES administrators caution investigators about combining the newest waves of NHANES data with data collected prior to 2005 because sampling design difference may lead investigators to find irregular results in basic estimates or estimates in sampling errors. As we move forward with this project and prior to the 2014 Meeting of the Population Association of America, we will explore the newer data and whether it is appropriate to combine it with the data from 1999-2005.

Our analysis was restricted to children aged 5-19 who were Mexican-American children of immigrants, Mexican-American children of natives, and non-Hispanic white children of natives (N = 8,516). The Mexican-Americans in the sample were much poorer than non-Hispanic whites. To provide enough statistical power to compare Mexican-American with white children at both low and middle socioeconomic statuses, we restricted the sample to children with a family income-to-poverty ratio less than 4.0 (N = 7,164); we selected this cut-off because 95% of Mexican-American children in our sample fell below it. We also dropped 523 children due to reporting extreme total kilocalorie values on the dietary recall (Kcal <500 or >8000), and 112 because they were pregnant at the time of the interview, leaving 6,529 in the final analytic sample.

Diet Quality. We used the 2010 Healthy Eating Index (HEI-2010) as an indicator of the nutritional quality of each child's diet. HEI-2010 is a scale ranging from 1 to 100 indicating the degree to which children's reported intake conforms to the guidelines recommended by the Center for Nutrition Policy and Promotion (CNPP) issued through the Department of Agriculture (USDA) and the Department of Health and Human Services (DHS). We used SAS code provided

by the National Cancer Institute through the U.S. National Institutes of Health (http://riskfactor.cancer.gov/tools/hei/tools.html) to construct the HEI-2010 index for all children in the sample. It is worth emphasizing that "2010" in the title of the HEI-2010 index refers to the year in which the index was developed, not the year in which the nutrition data were collected; we do not have a longitudinal sample or design.

Generational Status. Children of immigrants were defined as children living with a foreign-born householder, and children of natives were U.S.-born children living with a U.S.-born householder. We subdivided Mexican-American as children of immigrants and children of natives, and we restricted the white sample to children of natives.

Socioeconomic Status. We distinguished children by three levels of parental educational attainment based on the educational attainment of the householder: less than high school, high school degree, and more than high school. We did not distinguish "some college" from "college graduates" due to limited numbers of Mexican-American children with householders in these categories. We also used the ratio of family income to the poverty threshold and its square (i.e., a quadratic). In preliminary analyses, we tested several functional forms of this variable: linear, quadratic, logged, and as four evenly spaced categories; results were generally consistent but the best-fitting models (based on the BIC value; (Raftery 1995)) use the quadratic.

Controls. In multivariate models predicting HEI-2010, we included controls for the child's age, sex (girl=1) and whether the dietary recall occurred on a Saturday or Sunday (weekend=1). Preliminary analyses also controlled for the householder's gender (female=1) and age, but these factors were later dropped due to statistical insignificance.

Data Analysis. All analyses were conducted in Stata 12.0. Missing values were multiply imputed using Stata's chained equations routine to create 10 samples. To describe the sample, we estimated unweighted means and standard errors for all analytic variables (Table 1). We next used OLS regression to predict HEI-2010. To establish the basic relationship of socioeconomic status with HEI-2010, we estimated models that included as independent variables generation/ethnicity, parental education, family income-to-poverty, and the controls (Table 2). To test for multicolinearity, we included parental education and family income-to-poverty separately in Models 1 and 2, and together in Model 3. To assess whether the relationship between parental education and family income differed across groups, we tested interactions between these variables and generation/ethnicity. Model 1 tested the income x generation/ethnicity interaction while controlling for parental education; Model 2 tested the education x generation/ethnicity interaction while controlling for family income; and Model 3 included both sets of interactions together. To help interpret the significant interaction effects, we graphed predicted values of HEI-2010 by generation/ethnicity and parental education or family income level while holding all other factors at their mean levels. Following (Winship and Radbill 1994) recommendations, we did not weight the regression models.

Results

Table 1 provides the unweighted descriptive statistics for our sample. The average age of the children is 12.72. Additionally, 50% are female. Forty-two percent of our sample are Mexican-American children of immigrants (n=2,762), 22% are Mexican-American children of natives (n=1,421), and 36% are non-Hispanic white children of natives (n=2,346). The mean

level of dietary quality, measured by HEI-2010, was 42.19 for the full sample, and higher among Mexican-American children of immigrants (44.74) than Mexican-American children of natives (40.82) and non-Hispanic white children of natives (40.01). Parental educational attainment and family income (adjusted for the poverty line) vary across groups, probably reflecting socioeconomic mobility across generations among Mexican-Americans. For example, the share of parents with less than high school is 75% among Mexican-American children of immigrants, 34% among American-American children of natives, and 16% among non-Hispanic white children of natives. Additionally, the average ratio of income-to-needs for the full sample is 1.62, whereas the mean is 1.23 for Mexican-American children of immigrants, 1.70 for Mexican-American children of natives, and 2.03 for non-Hispanic white children of natives.

Our preliminary regression models predicting HEI-2010 can be found in Table 2. Compared with white children of natives, we see highly significant and large advantages in diet quality among Mexican-American children of immigrants (b=5.559, p<.001, Model 3), and smaller advantages among Mexican-American children of natives that are significant only when educational attainment is included in Models 1 and 3. Consistent with Hypothesis 1, children whose parents did not complete high school or were high school graduates tend to have significantly lower diet quality than children whose parents went beyond high school, although we do not see significant differences between the two least educated groups (Models 1 and 3). Additionally (and somewhat at odds with our expectations), income-to-needs exhibits a curvilinear relationship with diet quality; the linear and squared terms in Model 2 imply that the relationship is downward sloping at low incomes, but upward sloping for incomes above twice the poverty threshold (about $46,000 for a family of 4). The generation/ethnicity, income-to-

needs, and education coefficients remain generally consistent across models, with the exception of Mexican-American children of natives noted above.

Table 3 shows the results when we add interaction terms between SES and generation/ethnicity, thus testing our research expectations concerning variations for Mexican-American children. As a group, the education interactions are significant (Wald test: $p<.05$), and show significantly higher diet quality among both Mexican-American children of immigrants and children of natives with parents who did not complete high school (Model 1). Additionally, the relationship of income-to-needs with diet quality is significantly *more negative* for Mexican-American children of immigrants compared with white children of natives (Model 2), but the relationship between income-to-needs and diet quality is not different for Mexican-American children of natives. Together, the generation/ethnicity-income interactions are marginally significant (Wald test: $p<.10$). When all interaction terms are included together in Model 3, the significance and levels of the interaction terms are attenuated slightly.

To interpret the interaction effects, we graph predicted values in Figures 1 and 2 based on Model 3. The results concerning parental education are consistent with Hypothesis 3 (*No Dietary Improvement with Increasing Resources).* As shown in Figure 1, nutritional quality is significantly associated with greater parental education among non-Hispanic white children. Among Mexican-American children, however, the relationship is much weaker. It is only marginally significant among children of immigrants ($p<.10$) and insignificant among children of natives. It is also worth noting that, according to post estimation tests that alternate the omitted categories for generation/ethnicity and parental education, Mexican-American children of immigrants are advantaged relative to white children at all levels of parental

education. However, for Mexican-American children of natives, dietary quality is not significantly different from non-Hispanic white children of natives except at the lowest levels of parental education (less than high school) wherein they have a dietary advantage.

The results concerning family income are consistent with Hypothesis 4 (*Negative Acculturation Model for Mexican-American Children of Immigrants).* As shown in Figure 2, nutritional quality is not strongly associated with income-to-needs among non-Hispanic white children and Mexican-American children of natives. Nutritional quality declines with income below twice the poverty line and increases above it, but on the whole, the relationship is fairly flat. Among Mexican-American children of immigrants, however, nutrition significantly worsens with income ($p<.001$). Overall, nutritional quality for this group is much better than non-Hispanic whites at very low incomes, but this advantage declines in absolute terms and relative to the other two groups at higher income levels.

Conclusions

Our preliminary results provide a mixed account of the incorporation experiences of Mexican-American children. On the one hand, we see evidence of significant socioeconomic mobility between Mexican-American children of immigrants and children of natives, measured both in terms of parental educational attainment and the family income-to-poverty ratio. This is consistent with other research based on demographic surveys (Bean and Stevens 2003; Myers 2007); it is thus reassuring to find the same patterns in NHANES, a survey that is designed to measure trends and group differences in health, not necessarily socioeconomic and demographic characteristics. Additionally, we find strong evidence that Mexican-American

children of immigrants have much healthier diets than non-Hispanic white children. This is consistent with the large body of research showing better diets among immigrant families, although we go beyond prior research to show that this advantage persists across all levels of parental education.

On the other hand, these dietary advantages appear to be concentrated among poor immigrant families. Although data limitations make it impossible to follow immigrant families over time, our cross sectional analyses suggest that socioeconomic mobility within and across generations is not associated with better nutrition. Focusing first on children of immigrants, additional parental education does not appear to be related to better nutrition, and greater family income may even be associated with worse nutrition. Among later generations, Mexican-American children of natives, we see even lower levels of dietary quality that are indistinguishable from non-Hispanic white children of natives across the income distribution and at higher levels of parental education. Overall, these patterns are somewhat disturbing. Mexican-American children of natives whose parents dropped out of high school have lost much of the dietary advantages relative to their Mexican-American peers with similarly educated, but immigrant parents and the quality of their diet does not significantly improve if their parents have more education, as it does for whites.

Prior research on the relationship between children's weight status and income in the United States rarely show a significant relationship (see Goodman, Slap, and Huang 2003; Gordon-Larsen, Adair, and Popkin 2003; Martin 2008; Martin, Frisco, Nau, and Burnett 2012; Wang and Zhang 2006; Zhang and Wang 2007). Thus it is interesting that we found a significant negative association of income with diet quality among Mexican-American children of

immigrants. We can only speculate why this is the case. One possibility is that income works differently on weight than on diet. As discussed above, increased purchasing power may lead to worse diets. However, it is difficult to explain why this would be observed primarily among immigrant families. Another possibility is that income *per se* is unimportant. Rather, it may be associated with a host of other changes in immigrant children's lives and their immediate environments (peers, schools, and neighborhoods) that are in turn associated with worse diet.

We plan to pursue several additional steps in advance of the 2014 Annual Meetings of the Population Association. For example, we will explore whether the frequency of eating meals away from home, the similarity of different generation/ethnic groups' diet to the average diet of children of similar ages, and English language usage mediates these documented associations. We will also explore the possibility of increasing our sample by combining the 1999-2005 NHANES data with the 2007/08 and 2009/10 NHANES samples. In addition, we will explore creating a composite measure of SES that combines parental education and income to better speak to the assimilation literature discussing social class differences, not necessarily patterns delineated by parental education and income. These additional analyses will indicate the robustness of our findings.

In sum, we find significant differences in the associations between children's diet quality and parental education and family income across immigrant groups. In contrast to theoretical discussions expecting that the most disadvantaged immigrants will have the most adverse outcomes, we find that Mexican-American children of immigrants with the least educated parents and the lowest incomes have better diets than Mexican-American children of natives and non-Hispanic whites. Yet socioeconomic incorporation is not consistently associated with

improvements in Mexican-American children's diets and the patterns vary by parents' generation status. Thus, it is important to consider the intersection of generation/ethnicity and SES in predicting the quality of children's diets.

Table 1. Sample Descriptives (unweighted means and standard deviations for continuous variables)

	All Children (N=6,529)		Mexican-American Children of Immigrants (N=2,762)		Mexican-American Children of Natives (N=1,421)		NH-White Children of Natives (N=2,346)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Dependent Variable								
Healthy Eating Index (mean)	42.19	11.99	44.74	11.93	40.82	11.56	40.01	11.76
Independent Variables								
Generation/Ethnicity								
Mexican-American Children of Immigrants	0.42		1.00		0.00		0.00	
Mexican-American Children of Natives	0.22		0.00		1.00		0.00	
NH-White Children of Natives	0.36		0.00		0.00		1.00	
Householder Educational Attainment								
Less Than High School	0.45		0.75		0.34		0.16	
High School Graduate	0.25		0.14		0.33		0.32	
More than High School	0.30		0.11		0.33		0.51	
Family Income-to-poverty ratio (mean)	1.62	1.06	1.23	0.87	1.70	1.05	2.03	1.11
Controls								
Child's Age (years)	12.72	4.20	12.84	4.14	12.71	4.13	12.58	4.31
Child's Gender (girl=1)	0.50		0.48		0.52		0.50	
Day of Dietary Recall (Weekend=1)	0.41		0.44		0.37		0.39	

Data and Sample: 1999-2005 Continuous NHANES; Mexican-American chlidren of immigrants, Mexican-American children of natives, and non-Hispanic white children of natives age 5-19 with a family income-to-poverty ratio less than 4. See text for details.

Table 2. OLS Models Predicting Healthy Eating Index (HEI-2010)

	Model 1		Model 2		Model 3	
Generation/Ethnicity (ref=white chlldren of natives)						
Mexican-American Children of Immigrants	5.721	***	4.741	***	5.559	***
Mexican-American Children of Natives	1.191	*	0.788		1.138	*
Parental Educational Attainment (ref=more than HS)						
Less than high school	-2.043	*** [a]	---		-2.327	*** [a]
High school graduate	-2.165	***	---		-2.151	***
Family Income-to-poverty ratio	---		-2.289	*** [a]	-2.412	*** [a]
- squared	---		0.526	**	0.506	**
Child's Age (years)	-0.371	***	-0.383	***	-0.375	***
- squared	0.006	*	0.006	*	0.006	*
Child's Gender (girl=1)	1.420	***	1.389	***	1.404	***
Day of Dietary Recall (Weekend=1)	-1.711	***	-1.729	***	-1.695	***
Intercept	44.621	***	45.584	***	46.905	***
N	6,529		6,529		6,529	

Data and Sample: 1999-2005 Continuous NHANES; Mexican-American chlidren of immigrants, Mexican-American children of natives, and non-Hispanic white children of natives age 5-19 with a family income-to-poverty ratio less than 4. See text for details.

***p<.001; **p<.01; *p<.05; +p<.10

[a] significant as a group (p<.05)

Table 3. OLS Models Predicting Healthy Eating Index (HEI-2010) with Interactions between Generation/ethnicity and Socioeconomic Status

	Model 1		Model 2		Model 3	
Generation/Ethnicity (ref=white chlldren of natives)						
Mexican-American Children of Immigrants	4.650	***	7.184	***	6.269	***
Mexican-American Children of Natives	0.196		1.623		0.199	
Parental Educational Attainment (ref=more than HS)						
Less than high school	-4.138	***	-2.321	***	-3.940	***
x Mexican-American Children of Immigrants	2.569	* [a]	---		2.051	+ [b]
x Mexican-American Children of Natives	2.744	*	---		2.766	*
High school graduate	-2.296	**	-2.115	***	-2.245	**
x Mexican-American Children of Immigrants	0.026		---		-0.179	
x Mexican-American Children of Natives	0.986		---		0.992	
Family Income-to-poverty ratio	-2.388	***	-1.598	*	-1.762	*
- squared	0.495	**	0.390	*	0.401	*
Family Income-to-poverty ratio						
x Mexican-American Children of Immigrants	---		-1.082	* [b]	-0.895	+
x Mexican-American Children of Natives	---		-0.216		0.018	
Child's Age (years)	-0.382	***	-0.370	***	-0.377	***
- squared	0.006	*	0.006	*	0.006	*
Child's Gender (girl=1)	1.411	***	1.414	***	1.420	***
Day of Dietary Recall (Weekend=1)	-1.687	***	-1.699	***	-1.691	***
Intercept	47.309	***	45.792	***	46.430	***
N	6,529		6,529		6,529	

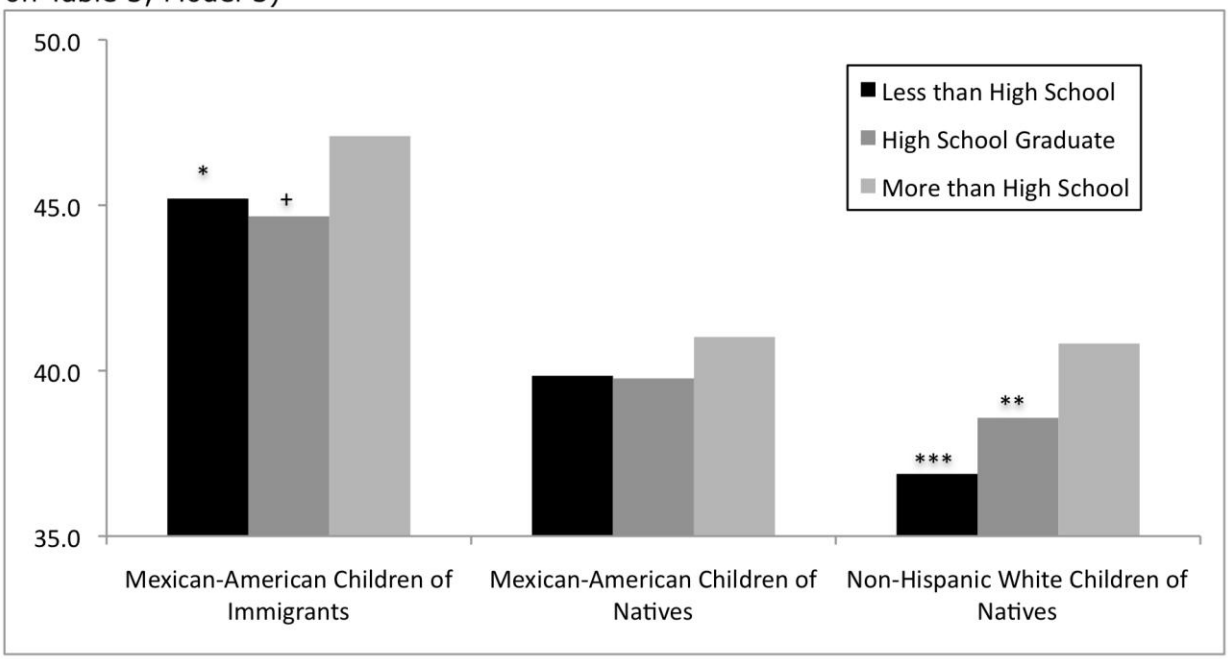
Data and Sample: 1999-2005 Continuous NHANES; Mexican-American chlidren of immigrants, Mexican-American children of natives, and non-Hispanic white children of natives age 5-19 with a family income-to-poverty ratio less than 4. See text for details.

***p<.001; **p<.01; *p<.05; +p<.10

[a] interactions significant as a group (p<.05)

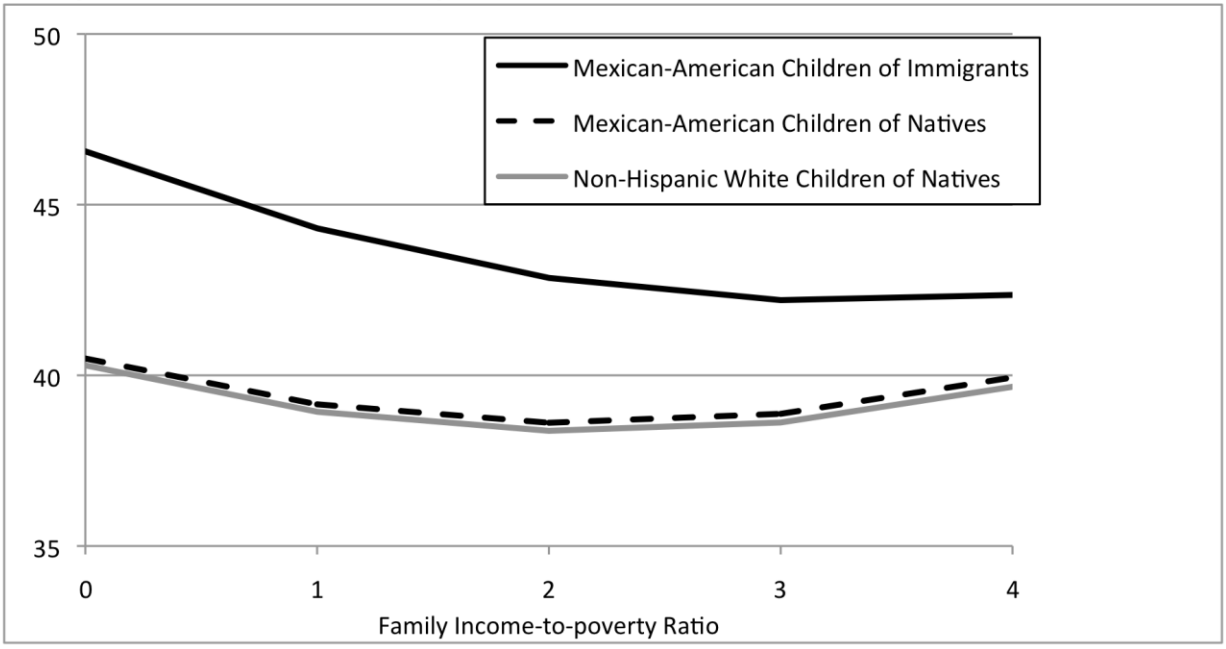
[b] interactions marginally significant as a group (p<.10)

Figure 1. Predicted HEI-2010 by Generation/Ethnicity and Parental Education (based on Table 3, Model 3)



Post-estimation tests indicate significance of difference from "More than High school" within groups (***p<.001; **p<.01; *p<.01; +p<.10)

Figure 2. Predicted HEI-2010 by Generation/Ethnicity and Family Income-to-Poverty Ratio (based on Table 3, Model 3)



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