THE LATINO INTER-GENERATIONAL PARADOX: INCREASES IN LOW BIRTH WEIGHT RISK ACROSS GENERATIONS

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Abstract:
Research into the 'Latino epidemiological paradox' has found that compared to similar socioeconomic native groups, first generation Latino immigrants exhibit advantages in health status measured in a variety of ways. These researchers focus on cross-sectional data to paint a picture of immigrants' health status at one point in time – either early or very late in life. Other researchers have begun to look at the evolution of health status among the first generation and have found that the initial health advantages of this bourgeoning group erode fairly quickly upon entry to the U.S. Following such a trajectory in the literature on immigrant health, this paper measures the effect of generational status (first/second generation versus third generation) on the odds of having a child of low birth weight among the children and grandchildren of immigrants. The main hypothesis I test is that the children and grandchildren of immigrants will have increasingly higher odds of having a low birth weight child compared to their parents across racial/ethnic groups. I use 25 years worth of data from the NLSY to run logistic regression analysis and find that generational status indeed does increase the odds that later generations of Latinas living in the U.S. will have a child of low birth weight compared to earlier generations. The finding that low birth weight risk increases over generations is paradoxical in that Latinos migrate to the U.S. in order to better their lives – yet, living in the U.S. results in declines in health. Implications of such findings include the possibility of a convergence of health status with low SES Blacks and increased reliance on health and social services as Latino immigrants assimilate into U.S. society over generations.

INTRODUCTION

Research into the health status of recent immigrants to the United States has found that first generation Latino immigrants tend to have favorable health outcomes compared to similar native populations (i.e. poor Blacks) and that living in the U.S. worsens their health outcomes over time. That is, while Latino first generation immigrants may be arriving in relatively better health compared to Americans already living in the U.S., such advantages erode over time for them. Such findings are cause for alarm because they indicate that living in the U.S. provides some sort of mechanism for decreasing immigrants' health status. Furthermore, decreases in health status may have policy significance insofar as losing initial health advantages may lead to future generations of low income immigrants' to rely more on medical and other health related social services.

This project examines the effects of immigrant generational status on low birth weight among multiple generations of Latinas living in the U.S. The impact of birth weight on early cognitive development and future educational outcomes have been well-documented both in reference to the general population as well as to minority and immigrant sub groups (Conley and Bennett 2000; Conley, Strully, and Bennett 2003). Building on previous literature in this vain, this project will focus on the predictors of low birth weight across three generations of Latinas in the U.S. Following previous research that has looked at the impact of generational status and acculturation on risky behavior outcomes among Latinos, this paper will expand the window of observation by examining the effects of U.S. tenure based not on a single cohort of individuals, but over generations (Black and Markides 1993; Markides and Coreil 1986; Markides, Coreil, and Ray 1987; Markides, Krause, and Mendes de Leon 1988; Markides, Ray, Stroup-Benham,

and Trevino 1990). In this way, this paper will not only take into account the experiences of primary or first generation immigrants as predictors of low birth weight, but also the experiences of their children and their children's children as they become incorporated into American society (Cobas, Balcazar, Benin, Keith, and Chong 1996; Scribner and Dwyer 1989; Singh and Yu 1996; Zambrana, Scrimshaw, Colling, and Dunkel-Schetter 1997).

The principal research question this paper will examine then is; what is the effect of immigrant generational status on having a child of low birth weight? Specifically, I will examine the effect of being either a first or second generation immigrant and being a third generation immigrant (compared across racial/ethnic groups) on the odds of having a low birth weight child as a result of first and second live births. I will compare across Latinas, Blacks, and a reference population sub group comprised primarily of European-origin Whites in the U.S. in order to assess the relative odds of having a low birth weight child across racial/ethnic immigrant and non-immigrant groups.

LATINO IMMIGRANTS & HEALTH OUTCOMES

The Static Immigrant

The apparent Latino 'epidemiologic paradox' (Markides and Coreil 1986) has provided ample material for demographers, sociologists, and epidemiologists in the field of minority health research to debate whether or not, and which kinds of, immigrants display health advantages over natives upon arrival to the U.S. (Franzini, Ribble, and Keddie 2001; Frisbie and Song 2003). In general, the literature on the Latino health paradox maintains that Latino immigrants' health status – measured either through birth weight, infant mortality, or adult mortality – is

more proximate to that of native Whites than to that of native Blacks (Franzini, Ribble, and Keddie 2001; Hummer, Biegler, De Turk, Forbes, Frisbie, Hong, and Pullman 1999; Hummer, Rogers, Nam, and LeClere 1999). For instance, being foreign born and being a documented immigrant (compared to U.S. born and undocumented) both yield low birth weight health advantages among Latina immigrants even when controlling for level of education and other relevant demographic characteristics (Acevedo-Garcia, Soobader, and Berkman 2005; Kelaher and Jessop 2002). Such findings are paradoxical insomuch as they disagree with hypotheses based on numerous studies of health comparisons between Whites and Blacks that all point to the centrality of education and socioeconomic status as a fundamental predictor of health.

Debates among health researchers have spawned numerous renditions of analyses which test and re-test the validity and generalizability (among Latino ethnic groups) of the claim that Latino immigrants are on average healthier compared to socioeconomically similar native Blacks (Fuentes-Afflick, Hessol, and Perez-Stable 1999; Fuentes-Afflick and Lurie 1997; Palloni and Arias 2004; Palloni and Morenoff 2001). While most of these studies have found some measure of advantage among certain Latino sub groups, some researchers still argue that that such a paradox does not exist at all for any Latino ethnic groups (Smith and Bradshaw 2006). Contention even exists for whether or not post-1965 immigration marks the first time such processes have ever appeared in U.S. history among Latino immigrants (Forbes and Frisbie 1991; Gutmann, Haines, Frisbie, and Blanchard 2000). Taken as a whole, the Latino paradox literature tends to stress the comparatively healthier status of recent immigrants measured at single points in time – either in the very early or very late stages of life and only among first generation immigrants.

The main relevance of this literature to the current paper lies in the fact that the Latino paradox tradition tends to use cross-sectional data to make comparisons between first generation immigrants and native Whites and Blacks. Rarely do these researchers utilize longitudinal data sets to analyze the long-term trends in the health status of immigrants – only going as far as testing whether observed perinatal health advantages persist and translate into cognitive advantages in early child development (Padilla, Boardman, Hummer, and Espitia 2002). Furthermore, the Latino paradox literature has firmly established that at least among some Latino ethnic groups, first generation immigrant status yields positive influences on various measures of health. In a necessary and until recently improbable shift to the study of health among immigrants, some researchers are beginning to redefine the fundamental unit of analysis from the static immigrant to one that grows through a dynamic interaction with U.S. culture & values.

The Dynamic Immigrant

Research shows that, over time, living in the U.S. has a negative effect on various measures of health among first generation immigrants. This is an ironic twist to common conceptions of motives for migration given that many immigrants (and U.S. citizens) typically think that coming to the U.S. and being exposed to the amenities and higher standard of living of the richest nation in the world would result in overall enhancements to quality of life. In fact, whether measuring immigrant status as place of birth or documentation status or measuring health as birth weight, morbidity, or mortality, the existing body of research is quite clear on the finding that living in the U.S. negatively impacts first generation immigrants' health.

Previous research has established quite thoroughly that at least some first generation Latino immigrants arrive to the U.S. exhibiting health advantages over similar native groups. Recently, research in this field has taken a turn toward studying the evolution of immigrant health status over time. It is this dynamic or 'acculturating immigrant' that will be the focus of this analysis. First, though, it is necessary to assess the state of knowledge of a) long-term comparisons of immigrants' health and b) the currently dominant models of immigrant assimilation & acculturation in reference to such an evolution in health status.

A recent study by Antecol and Bedard (Antecol and Bedard 2006) recently used data from the National Health Interview Survey to study the convergence rates of immigrants body mass index (BMI) to average BMI levels of native White and Black Americans. They find that while Latino men enter the U.S. weighing less than their native counterparts and never completely converge with them, Latina women lose any initial advantages completely and eventually converge with native levels of BMI within 10 years of arrival. A second example of a study which looks examines the effects of time in the U.S. on health outcomes is Popkin and Udry (Popkin and Udry 1998). These authors use data from the National Longitudinal Study of Adolescent Health and NHANES to argue that first generation Asian and Latino immigrants show less levels of obesity than Asians and Latinos born in the U.S. Their main finding suggests that adapting to U.S. standards of diet and behavior may play an important role in the heightening of immigrants' levels of obesity. While these are the only two studies I could find that compared health status over time, the dearth of research in this area is due less to motivation or need and primarily to data limitations.

Research on the assimilation patterns of recent immigrants – mostly focusing on those from Latin America – has been infused with a theoretically unnecessary undercurrent of debate. On the one hand, proponents of a more traditional model of assimilation argue that contemporary immigrants will blend culture and taste of their native traditions with dominant cultural streams of the U.S. in much the same way as did early-20th century European immigrants (Alba and Nee 1997). Such authors argue that while the traditional model of assimilation is indeed in need of revision, by and large contemporary immigrants will incorporate themselves in much the same manner as European immigrants did nearly a century ago.

On the other hand, segmented assimilation theory posits that contemporary immigrant incorporation will hinge on levels of exposure to social and economic capital as well as immigrants' reaction to negative treatment from the dominant society (Portes 1996; Portes and Rumbaut 2006; Portes and Zhou 1993; Rumbaut and Portes 2001). Critical to the assimilation patterns of contemporary immigrants and their children, in the segmented assimilation tradition, is the influence of social and economic resources and patterns of social stratification within the U.S. on the experiences of recent immigrants.

Segmented assimilation claims have found recent support in analyses of interracial friendship networks in schools (Quillian and Campbell 2003) and in re-analyses of immigrant assimilation (Alba and Nee 2003; Waldinger 2001). Regardless of theoretical debates regarding the process of assimilation, all approaches seem to be in agreement that immigrants are adapting at least some of the dispositions, traits, values, and practices of natives. It is here where the utility of assimilation theory becomes apparent. That is, the concept of the immigrant as a unit of analysis

transitions from being an inflexible static body (e.g. in the Latino paradox literature) to a malleable and dynamic agent capable of interaction with the host society.

Through the reconceptualization of immigrants as consisting of individual dynamic bodies, the literature of acculturation has been able to shed light on the mechanisms and models through which contemporary immigrants internalize native values, behaviors, and 'cultural' practices in the U.S. – that may or may not be distinct from those of their native societies. While some have critiqued the use of variables which attempt to capture elements of culture (Hunt, Schneider, and Comer 2004), the public health literature has generally infused studies of immigrant health outcomes with ideas about the level of incorporation measured on scales of acculturation. Such scales include levels of drinking and smoking behaviors (Marin, Perez-Stable, and Vanoss-Marin 1989) nutrition and diet (Gordon-Larsen, Mullan-Harris, Ward, and Popkin 2003; Khan, Sobal, and Martorell 1997; Mazur, Marquis, and Jensen 2003; Sundquist and Winkleby 2000) and language use (Cobas et al. 1996) as predictors of health outcomes among immigrants.

The main areas in which researchers have found detrimental effects of 'acculturation' on health include illicit drug use, drinking, smoking, nutrition and diet, and birth outcomes (Lara, Gamboa, Kahramanian, Morales, and Bautista 2005). What these studies do is measure the effects of various definitions of acculturation on health outcomes. While these studies are useful in describing how Latino immigrants compare to natives (and sometimes among differing Latino national/ethnic groups), they fall short of showing how immigrants' health status evolves over time – even though their main predictor, acculturation, assumes the façade of expressing growth as immigrants adapt to life in the U.S. In order to accomplish this later task, one must compare

subsequent measures of health status to earlier ones – while controlling for as many relevant behavioral practices as possible that may be linked to acculturation. Only through this method can one more fully understand the effect of living in the U.S. on the evolution of health status among immigrants over long periods of time.

HYPOTHESIS

This paper will take the model of the dynamic immigrant as a fundamental point of departure. While the static Latino paradox model has established that at least some recent Latino immigrants exhibit favorable health outcomes compared to native Blacks, the dynamic model shows that some of these health advantages have a tendency to diminish over time. This paper will contribute to the literature on the health status of contemporary immigrants by examining whether or not generational status impacts low birth weight. Such an analysis will shed light on the question of whether or not any health advantages seen in the first generation persist through subsequent generations. If health advantages do indeed persist, controlling for sustained behaviors tied to cultural or linguistic tradition, then there is room to argue that preserving such traits among immigrants (or capturing and distributing them among the population at large) may result in increases in health status. If health advantages do not persist over generations, controlling for similar cultural attributes, then perhaps one can argue that elements of immigrants' experience in U.S. society external to their levels of 'acculturation' may provide the mechanisms of negative health outcomes over time.

Hypothesis (1)

Latinos' odds of having a low birth weight child will increase over time. Later generational status will increase the odds of having a child of low birth weigh compared to earlier generational status. .

Low Birth Weight

I define low birth weight for live births to mothers of the NLSY as less than 5.5 pounds, less than 2500 grams, or less than 88 ounces.

DATA & METHODOLOGY

In this analysis, I use 25 years of data from the National Longitudinal Study of Youth (NLSY) public use file – a nationally representative sample of 12,686 men (N = 6,403) and women (N = 6,283) first surveyed in 1979 when respondents were ages 14 – 22. NLSY surveyed and interviewed respondents annually from the inception of the study until 1994 and biennially since. I stratify the sample to women who reported ever having at least two children and to those without missing values on variables stating mother's age at second birth at date of pregnancy in the 2004 wave of the study (N = 5,009). Dependent variables here are:

(1) Ever reporting low birth weight as a result of first pregnancy
(2) Ever reporting low birth weight as a result of second pregnancy

Both of these are aggregated from questions asked in each survey wave. I further stratify the sample based upon screener's 1979 assessment of racial/ethnic cohort. As a result, the race/ethnic group variable is truncated into three groups based on screener's opinion with 810

Latinos, 1,152 Blacks, and 3,047 Others. Appendix 1 shows coding schemes for the principal predictors in this analysis, generational status, along with all relevant controls.[1] Table 1 provides a cross tabulation of screener's 1979 assessment with respondents' own 1979 "first or only racial/ ethnic origin" identification. This table shows that while the screener's and respondent's assessments do not align completely, they are overall relatively consistent based on common conceptions of ethnicity.

[TABLE 1 ABOUT HERE]

Table 2 shows the percent of low birth weight babies born to first and second generation immigrants and third generation immigrants by racial/ethic group. Overall, one can see that across race/ethnicity, women of the NLSY had very few low birth weight children by their second birth. Blacks show the highest proportion of low birth children by second birth among both generational status groups and Latinos show growths in proportions of live births resulting in low birth weight between first/second generational status and third generational status.

[TABLE 2 ABOUT HERE]

Table 3 provides descriptive statistics for all predictors I use in analyses of the above low birth weight outcomes. All covariates I use in this study are dummy variables coded 0 for no and 1 for yes. I report means and standard deviations for the full sample and by racial/ethnic group. All

[1] I combine 1st and 2nd generation immigrant status into one 'first/second generation' variable because a cross tabulation of the variable that asks 'whether or not respondents were primary immigrants the first time they entered the U.S.' with the variable 'are you a U.S. citizen' resulted in an N of 224 individuals. This was too small a population to include as a distinct group so I combined them with those who answered yes to 'having a mother born outside the U.S.'

summary statistics reflect estimates for the sample post imputation for missing data. I included these selected covariates given their status as predictors of perinatal status in earlier studies.

[TABLE 3 ABOUT HERE]

The dependent variables in this analysis, low birth weight for first child and low birth weight for second child, are composite variables which aggregate the incidence of low birth weight among live births across all 25 years of the NLSY. I convert the variable for birth weight in pounds into ounces and combine it with the variable for birth weight in ounces for each year of the survey. I then aggregate across years and take and create dummy variables for incidence of having a child below or above 88 ounces. I do this for both first and second children born to female respondents. The low birth weight dependent variables is then coded 0 for above 88 ounces and 1 for below 88 ounces.[2] The two low birth weight variables then express whether or not a mother's first child was low birth weight and whether or not a mother's second child was low birth weight across all of the years of the survey.[3]

The main covariates of interests are the generational status variables. The first, for either being a first or second generation immigrant, is coded 0 for no and 1 for yes and refers to whether or not the respondent's mother was born in the U.S. I used mother's birthplace because it had a higher N count compared to father's birthplace. This strategy obviously leaves the door open for respondents whose mother was born outside of the U.S. and whose father was not to enter into

[2] If there was no observation that landed squarely on 88 ounces, I used the next highest observed ounce as the cutoff so as to create low birth weight variables that were conservative in their definitions.
[3] The earliest birth weight question appears in the 1983 version of the survey and captures children born to female respondents prior to the commencement of the NLSY survey itself.

my definition of 'first or second generational' status. Such an approach has not yet been completely dealt with in the theoretical literature of immigrants. Whether or not having one parent being born outside the U.S. and one in the U.S. designates one an immigrant or not remains theoretically unconfirmed. The second dummy covariate of interest, third generation immigrant status, is coded 1 conditional on if the respondent's paternal grandfather was born outside the U.S. and if the respondent's father was born in the U.S. This coding procedure focuses on paternal lineage due to data limitations regarding maternal lineage. I omitted first generation status simply because NLSY did not have a direct questions asking respondents whether or not they were born in the U.S. as well as the inability to construct a reliable estimate based on existing variables in the data set.

Missing Data

Table 4 shows the number and percent of observations that were missing values by individual variable (Allison 2002; Rubin 1987; Rubin 1996; Schafer and Graham 2002). I imputed values for observations with missing data by a regression switching technique through univariate imputation sampling (UVIS) in STATA (Carlin and N. Li 2003; Royston 2004). I only imputed missing values for covariates with missing values that were missing at random. Through imputation, I created 5 unique string datasets which represent estimates of values based on the regression switching procedure.

[TABLE 4 ABOUT HERE]

An advantage of multiply imputing missing values through UVIS is the ability to choose which type of regression STATA will use in the imputation process. I created five datasets in order to be able to later use multiple estimates of imputed values in regression analyses. The strength of using multiple imputations is that regressions will pull data from all five datasets and estimate coefficients based on these aggregate analyses. I included all variables used in the analysis in the imputation procedure for each variable with missing data.

I used logistic regression to estimate coefficients for generational status variables and relevant controls using all five datasets from multiple imputation. I regressed each outcome – incidence of low birth weight among first born and incidence among second born children – on both first/second generational status and third generational status as well as on all relevant covariates. I report results for both these fully conditional models as well as for models that show the impacts of additional covariates on generational status for both sets of dependent variables.

Such an analysis allows one to see the effects of time in the U.S. on birth weight in two ways. One, is through the impact of generational status itself. That is, this analysis allows for one to measure the impact of living in the U.S. over generations – thus showing the effects of U.S. tenure on acculturation spanning many years of settlement. The second manner in which this analytical framework will allow for time to work is through the use of dependent variables which show growth between first and second child born to female respondents. In this way, one can assess the impact of generational status and other controls over fertility histories. While NLSY contains birth histories for up to 11 children, 61% of women who ever reported having children in the 2004 survey had 2 or less children.

RESULTS

Table 5 shows logistic regression results for the effect of generational status on low birth weight outcomes stratified by race/ethnic group. The results shown are for fully conditional models in which I included both generational status and a complete array of control variables in all analyses.

Results show that among all groups, the effect of first/second generational status is negative on the odds of a respondent's second child being of low birth weight. The reference group for this coefficient (in log odds) includes respondents who answered that their mothers were born in the U.S. That is, the coefficient for first/second generational status show s a negative effect of such status on having a low birth weight child as a result of their respondent's second pregnancy compared to respondents who were neither first nor second generation immigrants.

Results for the regression of first/second generational status on having a low birth weight child resulting from second pregnancy among Latinas also shows a negative log odds coefficient (Latina first or second generation mothers have a predicted probability of having a low birth weight second child 29.60% lower compared to non first or second generation Latinas).[4] First or second generation Latinas have less odds of having a low birth weight second child compared to non first or second generation Latinas. It is important to note that this coefficient is statistically significant at the .10 level.

[4] Predicted probabilities calculated by the following formula: Probability = Odds/(1+Odds)

Among Blacks, being a first or second generation immigrant positively impacts the log odds that a mother will have a low birth weight first child (Black first or second generation mothers' predicted probability of having a low birth weight first child is 78.94% higher compared to non first or second generation mothers). These results are interesting because they refute the general finding among all immigrants. That is, while the coefficient for first or second generation immigrants is negative and significant, the coefficient among Blacks is positive and significant – and much larger in magnitude.

Table 6 shows logistic regression results for the effect of first or second generational status among Latinas on the log odds of having a low birth weight second child – compared to other Latinas. These models show the relative impact of additional controls on the effect of first or second generation status. I examine the effect of first or second generation on low birth weight for the second born children of respondents in this manner in order to reveal the changing dynamics of effects size and significance for the first/second generation status covariate.

First, this table reveals that the effect size of first or second generation status on having a low birth weight second child decreases slightly from the model with only no controls (Model 1) to the fully conditional model (Model 7) – a scale that starts at a predicted probability of +28.8% to +29.6 compared to non first or second generation Latinas. Models 4 and 5 show bumps in significance while Model 6, with vitamin use, returns significance to p-values below .05. The final fully conditional model reveals that this coefficient only meets marginal statistical significance when I introduce a complete array of controls.

Table 7 shows results for the effect of being a third generation Latina mother on having a low birth weight second child compared to other Latinas. While Table 5 showed no results due to matrix nonconformity in regression runs, this step-by-step analysis breaks down the relative impacts of additional controls on the effect size and significance of being a third generation immigrant.

One can see that the fully conditional model did not conform due to an error resulting from the inclusion of the 'prenatal care' variable to the model in Table 5. Table 7 shows that by excluding 'prenatal care' from the model estimating the effect of third generation status on low birth weight among the second child of Latina mothers, third generational status becomes a highly significant predictor. Model 7, which includes all controls save for prenatal visitation, shows that Latinas who were third generation immigrants had a predicted probability of having a low birth weight second child of +88.5% compared to non third generation immigrants. This estimate is highly significant and supports the hypothesis that time in the U.S.

DISCUSSION & CONCLUSION

The topic of health outcomes among immigrants has produced interesting research that has succeeded in shedding some light on the influences of health outcomes among this population subgroup. The research presented here measures the effect of generational status (measured by a) a combination of first or second generational and b) third generational) of immigrants on the odds of having a low birth weight child. The dependent variables are whether or not a respondent's first child was born under 5.5 pounds or not and whether or not a respondent's second child born was under 5.5 pounds. While previous studies have either examined health outcomes at a single point in time using cross sectional data or over time using longitudinal data

none have examined the effect of generational status on health outcomes. Doing so expands our conceptual understanding of assimilation by extending outcomes beyond the first generation. This approach also expands our knowledge of immigrants' health by looking at it not as an unchanging fact, but as a malleable process that reflects the experiences and practices of immigrants as they adapt to the customs and lifestyle of U.S. society.

The results from this analysis show that Latino immigrants' probability of having a low birth weight child becomes larger a) across pregnancy histories and b) across generations. That is, immigrants' risk of having a low birth weight child increases after having a first child – a finding which may have to do with the availability of resources given the low education and low socioeconomic status of Latinos in the U.S. – across generations. Such a trend is even more interesting considering that access to preventative health services remains a strong predictor of the use of such services among Latinos (Solis, Marks, Garcia, and Shelton 1990). Also, in terms of generational effects, future generations of Latinos are at increased odds of having a low birth weight child as well. Possible mechanisms for such a downturn in health status over generations may lie in Latinos' exposure to social and economic capital as well as their experiences confronting adverse mainstream American culture & discrimination (Portes and Rumbaut 2001). These findings are important to consider in relation to those from the 'Latino paradox' literature in that they show that Latino immigrants' health, while initially stronger compared to similar native populations, becomes increasingly worse for the children and grandchildren of primary immigrants.

One important possible consequence of such a trend is that over generations, Latinos' health status may converge with those of low SES Blacks. If such an event were to occur, given the high drop out rates of Latinos in the U.S., and their low socioeconomic status, then trends in social mobility among disadvantaged Latinos may also begin to look more like those of Blacks. The paradox of Latino health may then not lie in the finding of health advantage over natives among the first generation, but instead in the fact that while Latino immigrants come to the U.S. in hopes of enhancing theirs and their children's futures, living in the U.S. may actually be driving down their health over time. Not only is then the future of Latinos at stake, but also that of the communities and states in which Latinos live – if not of the nation as a whole.

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Tables:

Table 1. Cross Tabulation of Screener's 1979 Race/Ethnic Cohort Identification and Respondent's 1979 Self-Reported Ethnicity

	Respondent's Self-Reported Ethnicity					
	Either Cuban, Chicano, Mexican, Mexican-American, Puerto Rican, Other Hispanic, or Other Spanish	*Black*	*Either English, French, German, Irish, Italian, Polish, Portuguese, Russian, Scottish, or Welsh*	*Either Chinese, Filipino, Hawaiian/Pacific Islander, Japanese, or Korean*	*American*	*Native American*
Screener's Racial Classification						
Latina (N = 810)	84.60%	•	6%	•	1%	2.10%
Black (N = 1, 150)	•	96.30%	•	•	•	•
Other (N = 3,010)	•	•	79.20%	1%	7.50%	6.60%

• = Indicates that the response rate was less than 1%

Table 2. Percent of Low Birth Weight Live Birth By Race/Ethnic Origin and Generational Status

	Latinas (N = 810)		**Blacks (N = 1,152)**		**Others (N = 3,047)**	
	Not First or Second Generation Immigrant (N = 496)	*First or Second Generation Immigrant (N = 314)*	*Not First or Second Generation Immigrant (N = 1,119)*	*First or Second Generation Immigrant (N = 33)*	*Not First or Second Generation Immigrant (N = 2,870)*	*First or Second Generation Immigrant (N = 177)*
Low Birth Weight Live Birth						
First Pregnancy	3%	2%	6%	0%	3%	2%
Second Pregnancy	4%	2%	8%	0%	3%	1%
	Not Third Generation Immigrant (N = 297)	*Third Generation Immigrant (N = 134)*	*Not Third Generation Immigrant (N = 34)*	*Third Generation Immigrant (N = 29)*	*Not Third Generation Immigrant (N = 168)*	*Third Generation Immigrant (N =353)*
Low Birth Weight Live Birth						
First Pregnancy	3%	1%	12%	5%	2%	3%
Second Pregnancy	1%	4%	0%	6%	1%	1%

	All Latinas	**All Blacks**	**All Others**
Low Birth Weight Live Birth			
First Pregnancy	3%	7%	3%
Second Pregnancy	3%	7%	3%

Table 3. Descriptive Statistics for NLSY Mothers by Race/Ethnic Origin[a]

	All Origins (N = 5,009)		Latinas (N = 810)		Blacks (N = 1,152)		Others (N = 3,047)	
Variable	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Immigrant Status Variables[b]								
First or Second Generation Immigrant (0 = no, 1 = yes)	0.105	0.306	0.387	0.487	0.029	0.167	0.058	0.234
Third Generation Immigrant (0 = no, 1 = yes)	0.509	0.500	0.312	0.463	0.465	0.500	0.678	0.467
First Pregnancy Variables								
<20 Years Old At First Birth (0 = no, 1 = yes)	0.340	0.474	0.377	0.485	0.477	0.500	0.278	0.448
Made Prenatal Visits During First Pregnancy (0 = no, 1 = yes)	0.928	0.259	0.905	0.293	0.931	0.253	0.932	0.251
Drank Alcohol During 12 Months Prior to First Pregnancy (0 = no, 1 = yes)	0.355	0.478	0.252	0.434	0.269	0.443	0.415	0.493
Smoked During 12 Months Prior to First Pregnancy (0 = no, 1 = yes)	0.289	0.453	0.152	0.359	0.285	0.451	0.326	0.469
Took Vitamins During First Pregnancy (0 = no, 1 = yes)	0.892	0.310	0.886	0.318	0.874	0.332	0.901	0.299
Second Pregnancy Variables								
<20 Years Old At First Birth (0 = no, 1 = yes)	0.183	0.387	0.163	0.370	0.213	0.410	0.177	0.382
Made Prenatal Visits During Second Pregnancy (0 = no, 1 = yes)	0.938	0.242	0.937	0.243	0.933	0.249	0.939	0.238
Drank Alcohol During 12 Months Prior to Second Pregnancy (0 = no, 1 = yes)	0.380	0.485	0.286	0.452	0.340	0.474	0.419	0.493
Smoked During 12 Months Prior to Second Pregnancy (0 = no, 1 = yes)	0.316	0.465	0.204	0.403	0.347	0.476	0.334	0.472
Took Vitamins During Second Pregnancy (0 = no, 1 = yes)	0.858	0.349	0.860	0.347	0.857	0.351	0.858	0.349
Income								
1979 - 2004 Average Logged Income (Adjusted to January 2007 Consumer Price Indexes dollars)	10.318	1.681	10.291	1.410	9.976	1.621	10.455	1.749

[a] Race/ethnicity taken from 1979 Screener's assessment variable.

[b] Immigrant status was not identifiable for all observations. First or Second Gen. N = 5,009; Third Gen. N = 1,015.

Notes: NLSY data for mothers who had at least 2 children by 2004. All summary statistics taken from post imputation dataset that includes 5 unique string dataset. All CPI adjustments calculated through U.S. Department of Labor, Bureau of Labor Statistics inflation calculator.

Table 4. Number and Percent of Observations Imputed in Analysis: Total Sample N = 5,009

Variable	Number of Imputed Observations	Percent of Total Sample Imputed
Generational Status		
Mother's Birthplace	17	0.00%
Father's Birthplace	124	2.50%
Paternal Grandfather's Birthplace	692	13.80%
Primary Immigrant	4748	94.80%
Total Net Family Income		
1979	2310	46.10%
1980	2683	53.60%
1981	3110	62.10%
1982	3471	69.30%
1983	1096	21.90%
1984	4235	84.50%
1985	4253	84.90%
1986	4429	88.40%
1987	1507	30%
1988	1578	31.50%
1989	1508	30%
1990	1526	30%
1991	2119	42.30%
1992	2220	44.30%
1993	2318	46.30%
1994	2412	48.10%
1996	2480	49.50%
1998	2493	49.80%
2000	2653	52.96%
2002	2721	54.32%
2004	2666	53.22%
Pregnancy		
Age at First Birth	2299	45.90%
Age at Second Birth	2299	45.90%
Prenatal Care for Child 1	767	15.31%
Prenatal Care for Child 2	4283	85.51%
Alcohol Use in 12 Months Prior to First Pregnancy	1511	30.17%
Alcohol Use in 12 Months Prior to Second Pregnancy	4504	89.92%
Smoked During 12 Months Before First Pregnancy	1503	30.01%

Smoked During 12 Months Before Second Pregnancy	4563	91%
Took Vitamins During First Pregnancy	976	19.48%
Took Vitamins During Second Pregnancy	4428	88.40%

Table 5. Logistic Regression Results for Effects of Generational Status on Having a Child of Low Birth Weight by Race/Ethnic Origin: Fully Conditional Models

	All Origins (N = 5,009)		Latinas (N = 810)		Blacks (N = 1,152)		Others (N = 3,047)	
Variable	1st Child	2nd Child	1st Child	2nd Child	1st Child	2nd Child	1st Child	2nd Child
First or Second Generation	-0.185	-0.663*	-0.457	-0.871†	1.321**	-0.198	-0.349	NONCOMF
	(-0.279)	(0.343)	(-0.502)	(0.536)	(0.493)	(0.785)	-0.598	•
Third Generation	-0.138	NONCOMF	-0.988674	NONCOMF	NONCOMF	NONCOMF	0.375	NONCOMF
	(-0.419)	•	(-1.033)	•	•	•	(0.635)	•

†p<.10, *p<.05, **p<.01, ***p<.001

Notes: All models also include age of mother at birth of child, prenatal visits, alcohol consumption, smoking behavior, vitamin intake, and household net income. The symbol "•" indicates that regression runs resulted in matrix noncomformity error.

Table 6. Logistic Regression Results for Effect of First or Second Generational Status on Low Birth Weight of Second Child of Latina Mothers (N = 810)

Variable	M1: Alone	M2: M1 + Age	M3: M2 + Prenatal Care	M4: M3 + Alcohol Use	M5: M4 + Smoking	M6: M5 + Vitamin Intake	M7: M6 + HH Income
First or Second Generation	-0.917*	-0.954*	-0.952*	-0.921†	-0.809	-0.840*	-0.871†
	-0.481	-0.487	-0.493	-0.493	-0.518	-0.525	-0.536

†p<.10, *p<.05, **p<.01, ***p<.001

Table 7. Logistic Regression Results for Effect of Third Generational Status on Having a Second Child of Low Birth Weight: Latina Mothers (N = 810)

Variable	M1: Alone	M2: M1 + Age	M3: M2 + Prenatal Care	M4: M2 + Alcohol Use	M5: M4 + Smoking	M6: M5 + Vitamin Intake	M7: M6 + HH Income
Third Generation	1.752**	1.797**	NONCONF	1.836**	1.833**	1.831**	2.037**
	(-0.686)	-0.694		(-0.714)	(-0.738)	(-0.741)	(-0.91)

*p<.05, **p<.01, ***p<.001

Appendix 1: Variable Coding

Dependent Variables

Low Birth Weight (1st and 2nd Child)

(1) I converted variables referring to 'weight in pounds' from each survey year into ounces by multiplying by 16.
(2) I then added each of these variables to each year's 'weight in ounces' variables.
(3) I created a new set of variables corresponding to child's total weight in ounces for each year of the survey. I recoded these variables to create a dummy variable indicating whether or not the child weighed less than or greater than 88 ounces. I coded observations with values under 88 ounces = 1 and those over = 0. In years where there were no observations landing directly on 88 ounces, I conservatively applied low birth weight status to children at the next highest ounce above 88 ounces.
(4) Finally, I created the two low birth weight variables I use in all analyses by recoding them equal to 1 if low birth weight in Step (3) was equal to 1 and equal to 0 if birth weight in Step (3) was equal to 0. I did this separately for both first and second child's birth weight. In this way, I created variables for low birth weight among first and second children that refer to whether or not the mother ever had a low birth weight child by their second pregnancy that resulted in a live birth.

Predictors

Immigrant Generational Status

First or second generation immigrant:

(1) I used mother's birthplace since it captured a larger proportion of the sample. I replaced 'First or second generation immigrant' with a 1 if mother's birthplace was equal to 1 and 0 if mother's birthplace was equal to 0. This made all those who's mother had been born outside of the U.S. either a first or second generation immigrant and all those who's mother had been born in the U.S. not a first or second generation immigrant. This makes sense because if the mother of the respondent was foreign born, they could have either migrated into the U.S. and given birth to the respondent (making the respondent second generation immigrant) or the respondent could have also been born outside of the U.S. and migrated at some point prior to the survey (making her a first – or 1.5 – generation immigrant). The reference category is then respondents whose mother who was born in the U.S. (making the respondent neither a first or second generation immigrant).

Third generation immigrant:

(1) Since the only data on grandparents came from the father's side, I used father's birthplace for the first step. That is, I replaced 'Third generation immigrant' equal to 1 if father was born in the U.S. *and* paternal grandfather was born abroad. I then replaced 'Third generation immigrant' equal to 0 if father was born in the U.S. If the father had been born in the U.S. then the respondent was not an immigrant.

Controls

Prenatal Care (1st and 2nd Child)

(1) I generated two variables. One corresponding whether or not a mother made any prenatal visits (0 = no, 1 = yes) for the first child and one for visits for the second. For each of these two variables, I recoded them equal to 1 if the mother had answered 'yes' to having ever made prenatal visits to the doctor in any of their first or second pregnancies. I used variables from each of the survey years corresponding to mother's prenatal visitations behavior in order to create an aggregate variable indicating whether or not she had visited the doctor for any of her first or second pregnancies.

Alcohol Use (1st and 2nd Child)

(1) I generated two variables. One corresponding to whether or not a mother had ever drank alcohol in the 12 months prior to her first pregnancy and one for her second pregnancy. I recoded these variables 1 if the mother had ever responded to having drank alcohol during these 12 months and 0 if she responded that she had not. I did this for both variables corresponding to 1st and 2nd live birth child using alcohol consumption variables from each survey year.

Smoking (1st and 2nd Child)

(1) I generated two variables. One corresponding to whether or not a mother had ever smoked during the 12 months prior to her first pregnancy and one for her second pregnancy. I recoded these variables 1 if the mother ever responded yes and 0 if she had ever responded no. I did this for both variables corresponding to 1st and 2nd live birth child using smoking behavior variables from each survey year.

Vitamin Intake (1st and 2nd Child)

(1) I generated two variables. One corresponding to whether or not a mother had ever taken vitamins during her first pregnancy and one for her second pregnancy. I recoded these variables equal to 1 if the mother had ever taken vitamins and 0 if not. I did this for both variables corresponding to 1st and 2nd live birth child using vitamin intake variables from each survey year.

Age at Birth of Child (1st and 2nd Child)

(1) I recoded the 'age or respondent at first birth' variable asked in the 2004 survey wave so that women who answered that they had their first child at age 19 or younger equal 1 and those who answered that they had their first child at age 20 or older equal to 0.
(2) I recoded the 'age or respondent at second birth' variable asked in the 2004 survey wave so that women who answered that they had their first child at age 19 or younger equal 1 and those who answered that they had their first child at age 20 or older equal to 0.

Average Net Family Income (Consumer Price Index January 2007 Dollars)

(1) I recoded each survey year's 'net family income' variable by multiplying it by the CPI calculation of the worth of $1 in each year survey year.

(2) I then generated a new variable equal to the sum of each survey year's CPI recoded net family income variable from Step (1).
(3) Finally, I divided the new aggregate net family income variable from Step (2) by 25 – corresponding to each year that the NLSY survey asked respondents about their net family income (1979-2004).