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Socioeconomic gradients in body mass index (BMI) in U.S. immigrants during the transition to adulthood: examining the roles of parental education and inter-generational educational mobility

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Abstract

Background—Despite comparatively lower socioeconomic status (SES), immigrants tend to have lower body weight and weaker SES gradients relative to U.S.-born individuals. Yet, it is unknown how changes in SES over the life-course relate to body weight in immigrants versus US-born individuals.

Methods—We used longitudinal data from a nationally-representative, diverse sample of 13701 adolescents followed into adulthood to investigate whether associations between SES mobility categories (educational attainment reported by individuals as adults and by their parents during adolescence) and body mass index (BMI) measured in adulthood varied by immigrant generation. Weighted multivariable linear regression models were adjusted for age, sex, race/ethnicity, and immigrant generation.

Results—Among first generation immigrants, although parental education was not associated with adult BMI, an immigrant's own education attainment was inversely associated with BMI ($\beta = -2.6 \text{ kg/m}^2$; standard error (SE)=0.9, $p < 0.01$). In addition, upward educational mobility was associated with lower adult mean BMI than remaining low SES ($\beta = -2.5 \text{ kg/m}^2$; SE=1.2, $p < 0.05$). In contrast, among U.S.-born respondents, college education in adulthood did not attenuate the negative association between parental education and adult BMI. Although an SES gradient emerged in adulthood for immigrants, remaining low SES from adolescence to adulthood was not associated with loss of health advantage relative to U.S.-born respondents of U.S.-born parents of similar SES.

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COMPETING INTERESTS

The authors declared no conflict of interest.

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Conclusion—Immigrants were able to translate higher SES in adulthood into a lower adult mean BMI regardless of childhood SES, whereas the consequences of lower childhood SES had a longer reach even among the upwardly mobile U.S.-born.

Keywords

migration; obesity; life course epidemiology; education; longitudinal studies

INTRODUCTION

Immigrants have represented a growing share of the U.S. population in recent years.[1] Studies have frequently documented a health advantage among immigrants over the native-born, particularly for obesity.[2–6] Most cross-sectional work also suggests that immigrant weight converges to U.S.-born levels with longer time in the U.S.[7] However the few prospective studies published have demonstrated otherwise - immigrants gained less, or similar weight over time, thus maintaining their health advantage compared to U.S.-born individuals.[8–10] These findings are intriguing given that immigrants tend to have lower socioeconomic status (SES), and SES gradients in immigrants are often weak.[11,12]

Patterns of weight gain among first generation immigrants likely vary and may depend on their socioeconomic trajectory over the life-course. However little is known about the health implications of SES at different points in life among immigrants. The social mobility framework is one approach that may be especially relevant for studying SES and health in immigrants. It contends that upward or downward mobility (or lack thereof) has potential consequences for health in adulthood.[13,14] Despite their low SES, immigrants generally exhibit substantial intergenerational upward mobility.[15] Therefore, the information provided by observing low SES at a given point in time about future prospects is likely to be different for immigrants compared to native-born individuals. At the same time, not *all* immigrants appear to be equally mobile, with some groups suffering marginalization and blocked opportunities for mobility.[16,17] Remaining low SES into adulthood may be associated with worsening health and a corresponding loss of health advantage for immigrants through limited access to resources and greater exposure to adverse threats to health. On the other hand, if weak SES gradients are a function of healthy behaviors across the SES spectrum, and if immigrants carry these behaviors into adulthood, these practices may continue to act as a buffering mechanism against the adverse health effects of sustained low SES into adulthood.

Using prospective, population-based data from the National Longitudinal Study of Adolescent Health (Add Health), we used respondent and parental surveys to operationalize SES: parental education (childhood SES) and educational attainment of the Add Health respondents in adulthood (adult SES). We evaluated: 1) whether the association between SES mobility categories and adult BMI varied by immigrant generation; and 2) whether remaining low SES into adulthood was associated with loss of a BMI health advantage among immigrants.

METHODS

Data

Add Health is a nationally representative school-based study of U.S. adolescents ($n=20,745$; age 11–20 years), in grades 7 to 12 in 1994–95 (wave I), followed into adulthood. Data were collected under protocols approved by the Institutional Review Board at the University of North Carolina at Chapel Hill. The study used a multistage, stratified, school-based, clustered sampling design, supplemented with special minority samples. Details regarding the survey design and sampling frame have been previously described.[18] Of the 20,745 adolescents surveyed in wave I, 14,738 participants in grades 7–11 were re-interviewed at wave II in 1996 (age: 12–21 years). At wave III in 2001–02 (age: 18–27 years; $n=15,197$) and wave IV in 2008–09 (age: 24–33 years; $n=15,701$), all wave I respondents were eligible for follow-up regardless of wave II participation. Non-response analysis indicated no significant bias from attrition across waves.[19] Add Health contains large numbers of adolescents in immigrant families making it well-suited for analyses of immigrant generation.

Our analytic sample was drawn from the wave IV probability sample—respondents interviewed in waves I and IV and who had post-stratification, longitudinal sample weights ($n=14,800$). We used data from the wave I In-Home and Parent Questionnaires and the waves III and IV follow-up surveys. Exclusions included respondents without measured height and weight at wave IV (except individuals exceeding scale capacity who were included even though measured weight was missing) ($n=221$), pregnant females ($n=484$), Native Americans (due to small samples) ($n=108$), and missing data on race ($n=26$), parental education ($n=193$), respondents' education ($n=4$), and immigrant generation ($n=63$)-yielding a sample size of 13,701. A higher proportion of excluded respondents were female, but there were no other socio-demographic differences between excluded and included respondents.

Measures

Body mass index (BMI)—BMI (kg/m^2) was computed from height (m) and weight (kg) measured at wave IV (age: 24–33 years) during in-home surveys using standardized procedures. We substituted self-reported height and weight values for respondents exceeding scale capacity (150 kg; $n=15$). The correlation between self-reported and measured height and weight values in Add Health was high ($r=0.92$).[20] However, since correlations were slightly lower among first generation immigrants ($r=0.89$), we opted to primarily use measured values. None of the respondents exceeding scale capacity were first generation immigrants. For descriptive purposes, adults with a BMI of 25–29.9 kg/m^2 and BMI ≥ 30 kg/m^2 were classified as overweight and obese, respectively.[21]

SES variables—Education was our primary SES marker given it is among the most commonly studied SES indicators and it is well-correlated with long-term financial capital. [22] Also, given the age of the young adult respondents (mean=28 years), they are likely to not have yet achieved their highest income or occupational potential. Thus, income, wealth, and occupational comparisons between parents and their young adult children are less likely to yield meaningful information regarding socioeconomic mobility.

Parents' education was constructed using data from the wave I Parent Questionnaire and is measured as the higher of either the mother's or father's education: less than high school, high school/GED, some college, and college degree or more. If parental report of education was missing, adolescent reports were used.

Education of the respondent in adulthood was constructed using data from wave IV when respondents were ages 24–33 years (mean age=28 years). Given the low proportion of respondents with less than high school education, we pooled individuals with a high school degree or less into one category, yielding a three-category young adult education variable for regression analyses: high school or less, some college, college or more.

Sample size considerations and exploratory analyses of young adult BMI by education categories informed the creation of the following five SES mobility classifications: *stable low* (low-low): parents' education (PE) – high school or less, respondents' education (RE) – high school or less; *upward mobility* (low-high): PE – less than high school, RE – some college or more, or PE–high school, RE–college or more; *downward mobility* (high-low): PE – some college or more, RE – high school or less; *stable high* (high-high): PE – some college, RE –college or more or PE –college or more, RE – some college or more. We also created a *stable middle* category, which reflected no consistent or pronounced upward or downward pattern of mobility but was considered meaningfully distinct from the stable low or stable high category: PE- high school or some college, RE- some college. Results were robust to sensitivity checks using other cut-points.

Immigrant generation—Immigrant generation was based on questions about adolescents' and parents' place of birth. First generation respondents were foreign-born with foreign-born parents; second generation included U.S.-born respondents with at least one foreign-born parent, and third-plus generation included U.S.-born respondents with U.S.-born parents.

Other variables—Race/ethnicity (non-Hispanic white, non-Hispanic black, non-Hispanic Asian, and Hispanic) (at wave I), and age and sex (male/female) (at wave IV) data were self-reported. We also ascertained the primary language spoken at home in adolescence (English, other) to capture degree of acculturation within families (wave I).

Analysis

Analyses were performed using Stata software, version 12.1 (Stata Corp, College Station, Texas). Descriptive analyses used post-stratification sample weights to reflect national population estimates. Adjusted Wald tests compared means and design-based F-tests compared the distribution of categorical variables by immigrant generation. Survey procedures in Stata were used in all analyses to correct for unequal probability of selection, underestimation of variance due to the clustered sample design, and non-response bias due to attrition from wave I to wave IV.

Using multivariable ordinary least squares regressions, we estimated adjusted mean differences in adult BMI by parental education, young adult education, and SES mobility as independent variables in separate models. We assessed effect modification by immigrant generation by testing an interaction term between immigrant generation and each of these

SES variables (significant interactions: $p < 0.10$ for Wald test). Age (centered to 28 years), sex, and race/ethnicity variables were included in all models. We used model coefficients from the interaction model of SES mobility to plot the adjusted mean BMI by immigrant generation within SES mobility categories. This allowed us to better visualize whether first generation immigrants lost their ‘health advantage’ relative to third-plus generation immigrant respondents, especially if they remained low SES.

Due to sample size constraints, we were under-powered to adequately test heterogeneity by race/ethnicity and sex despite their potential importance as modifiers.

RESULTS

Descriptive analyses

A higher proportion of respondents raised in immigrant households (first and second generation) had parents with less than high school education. However, differences in educational attainment by immigrant generation disappeared by adulthood (Table 1). A higher proportion of first (relative to second or third-plus) generation immigrants remained low SES into adulthood, but a considerably higher proportion of first (relative to third-plus) generation immigrants experienced upward educational mobility (32% vs. 12%). Although first and second generation immigrants were raised by immigrant parents, there was a higher proportion of English spoken in the homes of U.S.-born respondents, suggesting a higher level of acculturation for these families. Mean BMI in adulthood was higher with increasing immigrant generation.

Multivariable analyses

Using model-based interactions, we formally tested whether associations between SES at different points in the life-cycle - in adolescence, in adulthood, and over time - with adult BMI, varied by immigrant generation. To facilitate interpretation, results from models stratified by immigrant generation are presented in Table 2.

Associations between parental SES and respondents’ BMI in adulthood varied by immigrant generation (p -interaction=0.0969), but there was no evidence of an interaction with adult SES (p -interaction=0.5170). Among first generation immigrants, there were no significant differences in adult BMI by parental education. However, among second and third-plus generation immigrants, there were statistically significant inverse SES gradients in BMI. In contrast in adulthood, there was a clear inverse relationship, regardless of immigrant status, whereby having college education as an adult was associated with a significantly lower mean BMI.

Associations between SES mobility and BMI significantly differed by immigrant generation (Model 3, Table 2; p -interaction=0.0304). Notably, although upward mobility (low-high) from adolescence into adulthood (versus remaining low SES) was not associated with a statistically significant mean difference in BMI for second and third-plus generation immigrants, upward mobility was associated with a significantly lower mean BMI among first generation immigrants ($\beta = -2.50 \text{ kg/m}^2$; $SE=1.2$). In sensitivity analyses, the addition

of language spoken at home did not explain differences in SES associations with adult BMI between first and second generation immigrant respondents.

Figure 1 shows the predicted mean BMI in adulthood by immigrant generation for SES mobility categories of most interest: ‘stable low,’ ‘upward mobility,’ and ‘stable high.’ Although immigrants remaining low SES from adolescence into adulthood had a higher BMI than immigrants experiencing upward mobility or high SES over time, across all socioeconomic mobility groups, first (versus second and third-plus) generation immigrants of similar SES maintained a lower BMI, albeit at varying magnitudes.

DISCUSSION

Past research demonstrates weak socioeconomic gradients with health among U.S. immigrants,[23–26] and the presence of a health advantage for immigrants compared to U.S.-born individuals despite their comparatively lower SES.[2,6] Building on this research, we prospectively investigated if, and when, SES gradients in BMI emerged among immigrants, and whether there was a corresponding loss of health advantage. Parental education alone did not predict BMI in adulthood for first generation immigrants, although it did among the U.S.-born (second and third-plus generation immigrants). However, an immigrant’s *own* educational attainment by adulthood was negatively associated with their BMI, similar to non-immigrants. These findings suggest that with longer time in the U.S., SES patterns in health among immigrants more closely resemble those observed among the U.S.-born.

Existing research on SES gradients in BMI among immigrants has been primarily cross-sectional, though previous work investigating longitudinal relationships between parental education and BMI trajectories from adolescence to adulthood showed the expected inverse association in U.S.-born individuals, but no association in first generation immigrants, consistent with our findings.[24] This same study also demonstrated an inverse gradient between parental education and BMI in adolescence among U.S.-born individuals, but no gradient among immigrants. This suggests that the influence of parental education on adult BMI stems from its impact, or lack thereof, on adolescent BMI. However, no studies, to our knowledge, have applied a life-course perspective to determine if sustained low SES over time has consequences for cardiovascular risk factors, like BMI, among immigrants.

Various life-course SES hypotheses have been proposed which posit that different SES experiences throughout life can affect adult health.[13] Upward socioeconomic mobility is hypothesized to attenuate the negative effects of earlier socioeconomic disadvantage, while downward socioeconomic mobility is hypothesized to have a negative influence on health despite relative socioeconomic advantages at earlier ages.[13,27] Findings from studies of SES mobility and cardiovascular risk in adulthood tend to be mixed, but sustained exposure to low SES has been most commonly associated with worse health.[13]

Much of the research on SES mobility and adult health has been limited to homogeneous and primarily native-born populations, which raises questions about the applicability of the evidence to immigrants. Our life-course analyses indicated that associations between SES

mobility and adult BMI differed between immigrants and the U.S. born. Among immigrants, upward mobility (versus remaining low SES) was associated with a lower mean BMI. In contrast, among second and third-plus generation immigrants, college education in adulthood did not attenuate the negative association between parental education and adult BMI. These patterns suggest that immigrants were able to translate higher education in adulthood into a lower adult mean BMI regardless of childhood SES, whereas the consequences of not having a college-educated parent had a longer reach among even the upwardly mobile U.S.-born.

Reasons for the absence of a parental education gradient among immigrants are unclear, but could relate to health selective migration,[28,29] or protective cultural factors, such as traditional diet patterns.[30,31] One study showed that children of immigrants ate less fast food and bad fats, and ate more fiber.[32] Existing research also suggests that immigrants may 'import' the SES gradients of their countries of origin,[33] maintaining the association between lower SES and healthier lifestyle habits of their host countries. Regardless of the source of the weak gradient in immigrants, healthier behaviors, even for respondents with less educated parents, may have, on average, buffered first generation immigrants from the higher BMI often associated with low childhood SES.

However, our findings also point to the emergence of an SES gradient among immigrants in adulthood, particularly if they obtained a college education. Consistent with the concept of segmented assimilation, which refers to the variety of ways that immigrants adapt to their host society,[16] these immigrants may be adapting to the behavioral norms associated with having a higher education in the U.S. Nonetheless, despite evidence of a gradient in adulthood, there was also no corresponding loss of health advantage compared to the third-plus generation if immigrants remained at low SES. Healthier behaviors learned earlier in life may have continued to act as a buffering mechanism for these immigrants. Additional research is necessary to confirm this hypothesis. Future studies are also necessary to determine if this health advantage extends to other health outcomes, and if this advantage will hold as respondents age into middle/older adulthood.

Although second generation immigrants were born in the U.S., they were raised in immigrant households, similar to first generation immigrants. Thus, the patterns we observed among first generation immigrants could also be expected to apply to them, but this was not the case. Instead, associations between SES mobility and adult BMI among second generation immigrants were more similar to individuals of the third-plus generation, who were raised by U.S.-born parents. It is possible that respondents of the second (versus first) generation might live in households more acculturated to U.S. customs. Indeed, we observed that English was more likely to be spoken in second generation households. While use of English might reflect higher acculturation and thus less healthy behaviors, adjusting for language spoken at home did not explain differences in SES associations with BMI between first and second generation immigrants. Unfortunately we did not have information like length of time immigrant parents lived in the U.S., which might have provided further insight into the extent of exposure to U.S. society among immigrant parents. The role of parental acculturation in shaping the health of their offspring merits further study.

Strengths of this study include the use of longitudinal data to track changes in SES using contemporaneous measures, rather than relying on recall (which has been shown to bias associations).[34] Another strength is the sampling of sufficient numbers of children from immigrant households, over a considerable timeframe, permitting analyses across immigrant generations. A limitation of this work relates to the measurement of childhood SES, particularly for immigrant households.[35] Parents' schooling may contain different information about SES for an immigrant, compared to a U.S.-born, household. For example, college education obtained from foreign institutions may not translate into the same kinds of opportunities and advantages as education obtained in the U.S, resulting in weaker SES associations for immigrants. However, the empirical consequences of such mis-measurement could be expected to be similar for both first and second generation immigrants, both of whom were raised by immigrant parents. Nevertheless, future analyses using other SES dimensions may be an important direction for future work to better understand how SES facilitates or prevents individuals from realizing better health.

We also note there may be important heterogeneity beneath the general patterns we report. The association between life-course SES and BMI may depend on country of origin, race/ethnicity, and sex. Indeed previous research shows that childhood SES has stronger implications for health in adulthood among women than men.[36,37] There are also greater limits to upward mobility among immigrants of Mexican origin compared to immigrants from Asia or Europe.[15,38] Unfortunately, we were under-powered to detect this level of important heterogeneity. Future work might consider the relevance of these findings for different immigrant subgroups.

Our results point to the importance of childhood experiences for shaping adult health. Among U.S.-born individuals, the adverse influence of not having a highly educated parent extended into adulthood, regardless of parental immigrant status, and there was no evidence of attenuation by higher educational attainment in adulthood. Interventions aimed at reducing obesity in these individuals may yield the greatest benefits if implemented earlier in the life-course. Among immigrants, although parental education did not have implications for adult BMI, over time, an SES gradient did emerge, pointing to the relative importance of adult SES in the development of disparities. Even though immigrants maintained a health advantage relative to U.S.-born respondents of similar SES, it is unclear whether this advantage will hold as they age into older adulthood. Continued research in this area can facilitate development of interventions to preserve health among immigrants and prevent the deterioration that may appear with longer time in the U.S.

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What is already known on this subject

- Past research demonstrates weak socioeconomic gradients with health among U.S. immigrants, and the presence of a health advantage for immigrants compared to U.S.-born individuals despite their comparatively lower socioeconomic status.
- Few studies have applied a life-course perspective using longitudinal data to determine if, and when, socio-economic gradients emerge among immigrants, and whether sustained low socioeconomic status over time has consequences for cardiovascular risk factors, like BMI, among immigrants.

What this study adds

- Among first generation immigrants, although parental education alone did not have implications for BMI in adulthood, an immigrant's own educational attainment by adulthood was negatively associated with their BMI.
- Upward educational mobility (versus remaining low socioeconomic status) was associated with a lower adult mean BMI among immigrants, but among U.S.-born individuals, college education in adulthood did not attenuate the negative association between parental education and adult BMI.
- Although an educational gradient emerged for immigrants in adulthood, all immigrants nevertheless retained a health advantage over U.S.-born individuals with U.S.-born parents even if they remained at low socioeconomic status into adulthood.

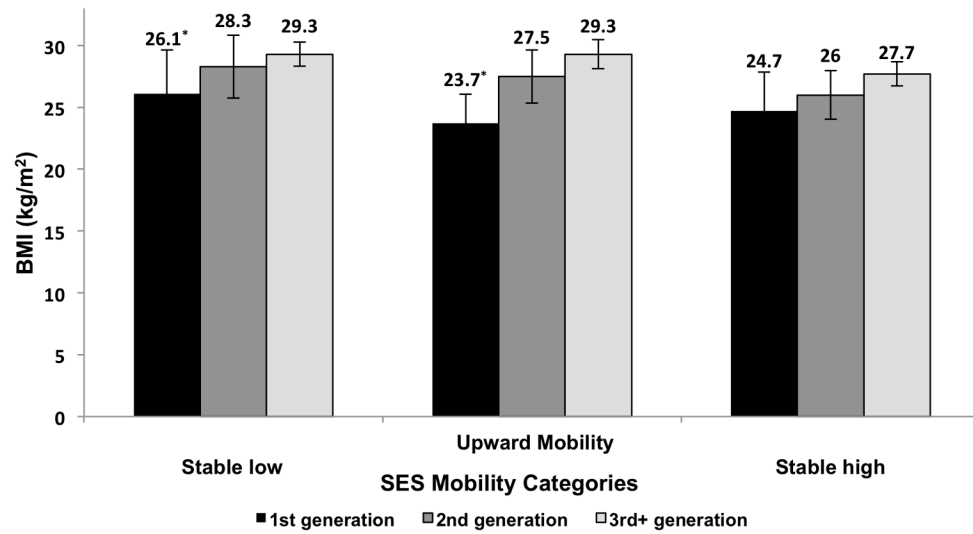


Figure 1. Adjusted mean BMI (kg/m^2) in adulthood by immigrant generation within SES mobility categories, in analysis sample ($n=13701$) from Wave I (1994–1995) and Wave IV (2008–2009) of the National Longitudinal Study of Adolescent Health

Abbreviation: SES, socioeconomic status. Linear regression model adjusted for age (mean-centered at age 28), sex, race/ethnicity, immigrant generation, and interactions for immigrant generation x SES mobility. Results for ‘downward mobility’ and ‘stable middle’ categories not illustrated. P-interaction (immigrant generation x SES mobility) = 0.0304. * $p < 0.1$, comparing first generation immigrants to third-plus generation immigrants (ref) within SES mobility categories.

Table 1

Sample characteristics by immigrant generation in analysis sample (n=13701) from Wave I (1994–1995) and Wave IV (2008–2009) of the National Longitudinal Study of Adolescent Health

	Immigrant generation		
	First (FB/FB)	Second (FB/USB)	Third+ (USB/USB)
N (unweighted)	918	1948	10835
Parental education (%)**			
Less than high school	43.5	32.36	11.63
High school	19.67	23.89	35.02
Some college	15.18	21.64	29
College or more	21.66	22.12	24.36
Young adult education (wave IV) (%)			
Less than high school	9.04	8.83	9.23
High school	17.64	14.3	18.39
Some college	41.37	44.7	42.69
College or more	31.95	32.17	29.69
SES Mobility (%)**			
Low-Low	23.49	18.72	19.12
Low-High	31.81	25.26	11.88
High-Low	3.19	4.41	8.5
Stable middle	15.04	22.98	29.93
High-High	26.48	28.63	30.57
Language spoken at home in adolescence (%)**			
English	27.72	68.11	99.46
Other	70.63	31.89	0.54
Mean age, wave IV, years	28.97 (0.23)*	28.31 (0.18)	28.31 (0.12)
Sex (%)			
Male	52.81	52.65	52.28
Female	47.19	47.35	47.72
Race (%)**			
White	7.64	31.98	76
Black	3.53	5.84	18.04
Hispanic	30.83	14.56	0.61
Asian	58	47.62	5.35
Young adult mean BMI (kg/m²)	27.80 (0.49)*	28.93 (0.36)	29.05 (0.15)
Young adult weight status (%)			
Normal	37.59	33.19	33.96
Overweight	33.9	30.22	29.57
Obese	28.51	36.58	36.47

Abbreviations: FB, foreign-born; USB, U.S.-born; SES, socioeconomic status; BMI, body mass index

Weighted and corrected for clustering to generate nationally representative estimates. Numbers in parentheses are standard errors.

*
p <0.05;

**
p<0.001: comparing distributions by immigrant generation; comparisons of means are relative to third-plus immigrant generation referent group

Table 2

Adjusted mean differences in adult BMI (kg/m²) by education categories, stratified by immigrant generation, in analysis sample (n=13701) from Wave I (1994–1995) and Wave IV (2008–2009) of the National Longitudinal Study of Adolescent Health.

	Immigrant generation			Difference** (1 st vs. 3 rd)	p
	First (FB/FB) β (SE)	Second (FB/USB) β (SE)	Third+ (USB/USB) β (SE)		
Parental education					
Intercept	24.09 (1.31)	27.97 (1.02)	29.93 (0.36)	<0.0001	0.084
< High school	Ref	Ref	Ref		
High school	1.10 (1.17)	-0.28 (0.90)	-0.63 (0.35)	0.158	0.722
Some college	-0.53 (0.82)	-0.51 (0.92)	-1.11 (0.41) [†]	0.529	0.576
College or more	1.06 (1.08)	-1.98 (0.81) [‡]	-2.20 (0.39) [*]	0.005	0.813
p-interaction (immigrant generation x parental education): 0.0969					
Model 1					
Young adult education					
Intercept	26.49 (1.43)	28.03 (0.97)	29.34 (0.31)	0.052	0.218
<=High school	Ref	Ref	Ref		
Some college	-1.28 (1.04)	0.29 (0.78)	0.39 (0.34)	0.110	0.916
College or more	-2.57 (0.94) [†]	-2.10 (0.75) [†]	-1.90 (0.31) [*]	0.499	0.819
p-interaction (immigrant generation x young adult education): 0.5170					
Model 2					
Model 3					
SES Mobility					
Intercept	26.13 (1.84)	28.27 (1.25)	29.27 (0.50)	0.101	0.499
Stable low	Ref	Ref	Ref		
Upward mobility	-2.45 (1.22) [‡]	-0.80 (1.06)	0.06 (0.60)	0.074	0.531
Downward Mobility	0.24 (1.91)	-1.45 (1.54)	-0.60 (0.53)	0.677	0.600
Stable middle	-0.79 (1.58)	0.25 (1.13)	0.25 (0.50)	0.534	0.999
Stable high	-1.47 (1.57)	-2.24 (1.03) [‡]	-1.55 (0.50) [‡]	0.962	0.587

Immigrant generation			
First (FB/FB)	Second (FB/USB)	Third+ (USB/USB)	Difference** (2 nd vs. 3 rd)
β (SE)	β (SE)	β (SE)	p
p-interaction (immigrant generation x SES mobility): 0.0304			

All models further adjusted for race/ethnicity, sex, and age (mean-centered to age 28 years).

SE=standard error; SES=socioeconomic status; FB=foreign-born; USB=U.S.-born; BMI=body mass index

* p<0.0001,

[†] p<0.01,

[‡] p<0.05

** Differences are p-values derived from interaction models (including interaction terms: immigrant generation*SES indicator) comparing estimates for the 1st and 2nd generation to corresponding estimates for the 3rd generation.